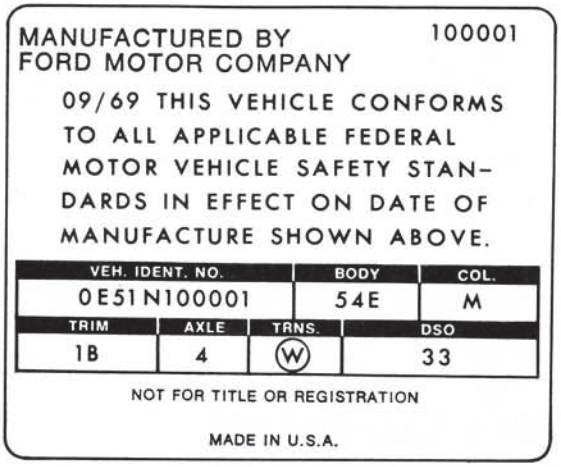
17-01-01

Automatic Transmission

GROUP 17



TRANSMISSION CODE	TRANSMISSION TYPE
V	SEMI-AUTOMATIC (C4S)
W	AUTOMATIC (C4)
U	AUTOMATIC (C6)
X	AUTOMATIC (FMX)
Z	AUTOMATIC (C6 SPECIAL)

D2116-A

FIG. 1 — Typical Vehicle Certification Label-Transmission Identification

PART 17-01 *General Transmission Service*

COMPONENT INDEX Applies To Models As Indicated	All Models	Ford	Mercury	Meteor	Cougar	Fairlane	Falcon	Maverick	Montego	Mustang	Lincoln-Continental	Thunderbird	Continental-Mark III
AIR PRESSURE CHECKS	01-07												
ANTI-STALL DASHPOT CLEARANCE CHECK (Engine Compartment)	01-04												
CASE (Transmission) Inspection	01-16												
CONTROL PRESSURE CHECK	01-05												
CONTROL VALVE BODY Inspection	01-16												
CONVERTER Checking	01-04												
Cleaning	01-11												
DRAIN AND REFILL (Transmission)	01-08												
ENGINE IDLE SPEED CHECK	01-04												
EXTENSION HOUSING INSPECTION	01-15												
FLUID AERATION CHECK	01-03												

A page number indicates that the item is for the vehicle(s) listed at the head of the column.
N/A indicates that the item is not applicable to the vehicle(s) listed.

COMPONENT INDEX Applies To Models As Indicated	All Models	Ford	Mercury	Meteor	Cougar	Fairlane	Falcon	Maverick	Montego	Mustang	Lincoln-Continental	Thunderbird	Continental-Mark III
FLUID LEAKAGE CHECK	01-03												
FLUID LEVEL CHECK	01-03												
FRONT CLUTCH (Forward) INSPECTION													
C4 Transmission		01-15	N/A	01-15	01-15	01-15	01-15	01-15	01-15	01-15	N/A	N/A	N/A
C4S Transmission		N/A	N/A	N/A	N/A	N/A	N/A	01-15	N/A	N/A	N/A	N/A	N/A
C6 Transmission		01-15	01-15	01-15	01-15	01-15	N/A	N/A	01-15	01-15	01-15	01-15	01-15
FMX Transmission		01-15	N/A	01-15	01-15	01-15	N/A	N/A	01-15	01-15	N/A	N/A	N/A
FRONT PUMP AND STATOR SUPPORT Inspection	01-15												
FRONT SERVO (Intermediate) INSPECTION													
C4 Transmission		01-16	N/A	01-16	01-16	01-16	01-16	01-16	01-16	01-16	N/A	N/A	N/A
C4S Transmission		N/A	N/A	N/A	N/A	N/A	N/A	01-16	N/A	N/A	N/A	N/A	N/A
C6 Transmission		01-16	01-16	01-16	01-16	01-16	N/A	N/A	01-16	01-16	01-16	01-16	01-16
FMX Transmission		01-16	N/A	01-16	01-16	01-16	N/A	N/A	01-16	01-16	N/A	N/A	N/A
GOVERNOR INSPECTION (Automatic Only)	01-16												
HYDRAULIC SYSTEM BENCH TESTS (FMX)													
Pressure Tests		01-08	N/A	01-08	01-08	01-08	N/A	N/A	01-08	01-08	N/A	N/A	N/A
Testing Tool Installation		01-08	N/A	01-08	01-08	01-08	N/A	N/A	01-08	01-08	N/A	N/A	N/A
MANUAL LINKAGE CHECKS	01-04												
MANUAL SHIFT LINKAGE GROMMET COLUMN SHIFT Removal and Installation		01-10	01-10	01-10	N/A	01-10	01-10	01-10	01-10	N/A	01-10	01-10	01-10
OIL COOLER CLEANING	01-11												
OIL COOLER TUBES Removal and Installation	01-08												
ONE-WAY CLUTCH Inspection	01-16												
OUTPUT SHAFT AND PRIMARY SUN GEAR SHAFT (FMX) Inspection		01-14	N/A	01-14	01-14	01-14	N/A	N/A	01-14	01-14	N/A	N/A	N/A
PINION CARRIER, ONE-WAY CLUTCH AND CENTER SUPPORT (FMX) Inspection		01-14	N/A	01-14	01-14	01-14	N/A	N/A	01-14	01-14	N/A	N/A	N/A
PINION CARRIERS INSPECTION													
C4 Transmission		01-14	N/A	01-14	01-14	01-14	01-14	01-14	01-14	01-14	N/A	N/A	N/A
C4S Transmission		N/A	N/A	N/A	N/A	N/A	N/A	01-14	N/A	N/A	N/A	N/A	N/A
C6 Transmission		01-14	01-14	01-14	01-14	01-14	N/A	N/A	01-14	01-14	01-14	01-14	01-14
PRESSURE REGULATOR (FMX) Inspection		01-16	N/A	01-16	01-16	01-16	N/A	N/A	01-16	01-16	N/A	N/A	N/A
REAR CLUTCH (Reverse-High) INSPECTION													
C4 Transmission		01-15	N/A	01-15	01-15	01-15	01-15	01-15	01-15	01-15	N/A	N/A	N/A
C4S Transmission		N/A	N/A	N/A	N/A	N/A	N/A	01-15	N/A	N/A	N/A	N/A	N/A
C6 Transmission		01-15	01-15	01-15	01-15	01-15	N/A	N/A	01-15	01-15	01-15	01-15	01-15
FMX Transmission		01-15	N/A	01-15	01-15	01-15	N/A	N/A	01-15	01-15	N/A	N/A	N/A
REAR SERVO (Low-Reverse) INSPECTION													
C4 Transmission		01-16	N/A	01-16	01-16	01-16	01-16	01-16	01-16	01-16	N/A	N/A	N/A
C4S Transmission		N/A	N/A	N/A	N/A	N/A	N/A	01-16	N/A	N/A	N/A	N/A	N/A

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COMPONENT INDEX Applies To Models As Indicated	All Models	Ford	Mercury	Meteor	Cougar	Fairlane	Falcon	Maverick	Montego	Mustang	Lincoln-Continental	Thunderbird	Continental-Mark III
FMX Transmission		01-16	N/A	01-16	01-16	01-16	N/A	N/A	01-16	01-16	N/A	N/A	N/A
REAR SUPPORT (FMX) Inspection		01-15	N/A	01-15	01-15	01-15	N/A	N/A	01-15	01-15	N/A	N/A	N/A
SHIFT POINT CHECKS (Automatic Only)	01-06												
STATOR ONE WAY CLUTCH CHECK	01-11												
STATOR TO IMPELLOR INTERFERENCE CHECK	01-11												
STATOR TO TURBINE INTERFERENCE CHECK	01-11												
TRANSMISSION CLEANING	01-11												
TURBINE AND STATOR END PLAY CHECK	01-11												
VACUUM DIAPHRAGM (Automatic Only) Adjustment	01-09												
Checking	01-06												
Removal and Installation	01-09												
A page number indicates that the item is for the vehicle(s) listed at the head of the column. N/A indicates that the item is not applicable to the vehicle(s) listed.													

Four different three-speed transmissions are used. The C4 Automatic, C4S Semi-Automatic, C6 Automatic and the FMX Automatic. Part 17-01 covers testing, common adjustments and repairs, and cleaning and inspection for the four types of transmissions. Where there are differences in procedures or specifications, the type of transmission affected will be designated.

1 AUTOMATIC TRANSMISSION TESTS

When diagnosing transmission problems, refer to the Car Diagnosis Manual for the detailed information on the items that could be causing the problem.

The following preliminary checks should be made before proceeding with other diagnosis checks.

TRANSMISSION FLUID LEVEL CHECK

1. Make sure that the vehicle is standing level. Then firmly apply the parking brake.
2. Run the engine at normal idle speed. If the transmission fluid is cold run the engine at fast idle speed (about 1200 rpm) until the fluid reaches its normal operating temperature. When the fluid is warm, slow the engine down to normal idle speed.
3. On a vehicle equipped with a vacuum brake release, disconnect the release line and plug the end of the line; otherwise the parking brake will not hold the transmission in any drive position.
4. Shift the selector lever through all positions, and place the lever at P. Do not turn off the engine during the fluid level checks.
5. Clean all dirt from the transmission fluid dipstick cap before removing the dipstick from the filler tube.
6. Pull the dipstick out of the tube, wipe it clean, and push it all the way back into the tube. Be sure it is properly seated.
7. Pull the dipstick out of the tube again, and check the fluid level. The fluid level should be above the ADD mark. If necessary, add enough fluid to the transmission through the filler tube to bring the level between the ADD and FULL marks on the dipstick. **Do not overfill the transmission.** Install the dipstick, making sure it is fully seated in the tube.
8. Connect the vacuum brake release line if so equipped, and test it for proper operation.

FLUID AERATION CHECK

A fluid level that is too high will cause the fluid to become aerated: Aerated fluid will cause low control pressure, and the aerated fluid may be forced out the vent.

Check the transmission fluid level. Low fluid level can affect the operation of the transmission, and may indicate fluid leaks that could cause transmission damage.

TRANSMISSION FLUID LEAKAGE CHECKS

Check the speedometer cable connection at the transmission. Replace the rubber seal if necessary.

Leakage at the oil pan gasket often can be stopped by tightening the attaching bolts to the proper torque. If

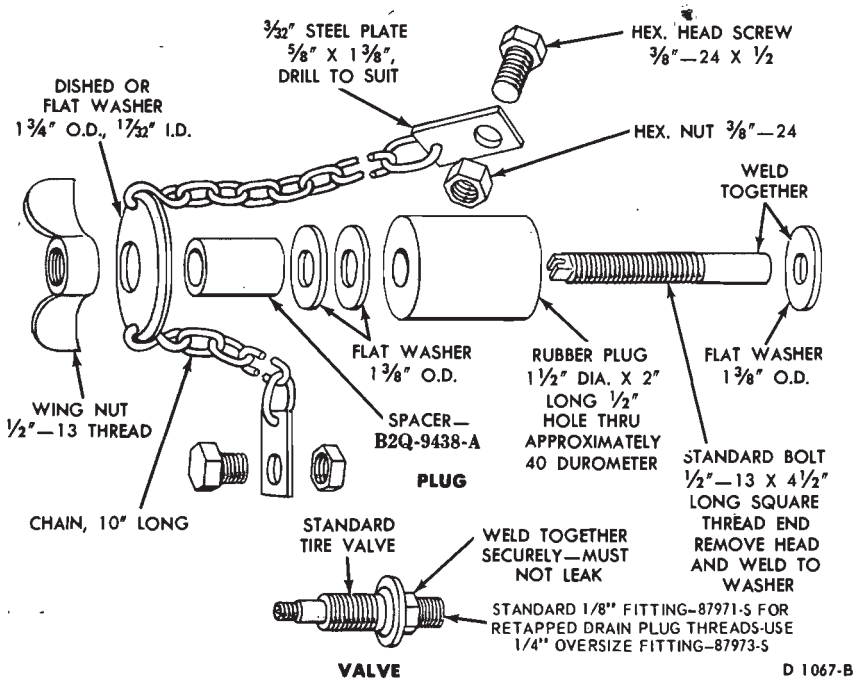


FIG. 2—Converter Leak Checking Tool

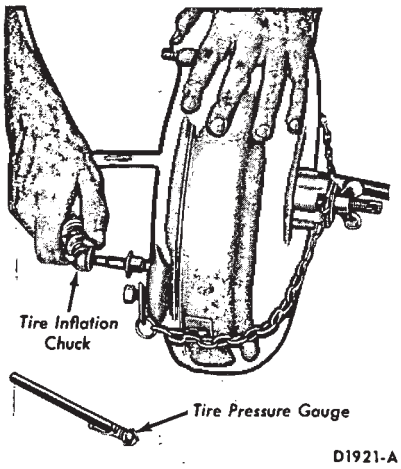


FIG. 3—Converter Leak Tool Installation

necessary, replace the gasket.

Check the fluid filler tube connection at the transmission case or pan. If leakage is found here, install a new O-ring or tighten the fitting to the specified torque.

Check the fluid lines and fittings between the transmission and the cooler in the radiator tank for looseness, wear, or damage. If leakage cannot be stopped by tightening a fitting, replace the damaged parts.

Check the engine coolant in the radiator. If transmission fluid is present in the coolant, the cooler in the radiator is probably leaking.

The cooler can be further checked for leaks by disconnecting the lines from the cooler fittings and applying 50-75 psi air pressure to the fittings. Remove the radiator cap to relieve the pressure build up at the exterior of the oil cooler tank. If the cooler is leaking and will not hold pressure, the cooler must be replaced. Cooler replacement is described in the Cooling System Section of Group 24.

If leakage is found at either the downshift control lever shaft or the manual lever shaft, replace either or both seals.

Inspect the pipe plug on the left side of the transmission case at the front. If the plug shows leakage, torque the plug to specifications. If tightening does not stop the leaks, replace the plug. On a C6 transmission, a TV pressure plug is also provided on the right rear side of the case.

When a converter drain plug leaks, remove the drain plug with a six-point wrench. Coat the threads with FoMoCo Perfect Seal Sealing Compound or its equivalent, and install the plug. Torque the drain plug to specification. **Fluid leakage from the converter housing may be caused by engine oil leaking past the rear main bearing or from oil gallery plugs, or power steering oil leakage from steering system. Be sure to determine the exact cause of the leak before repair procedures are started.**

Oil-soluble aniline or fluorescent dyes premixed at the rate of 1/2 teaspoon of dye powder to 1/2 pint of transmission fluid have proved helpful in locating the source of the fluid leakage. Such dyes may be used to determine whether an engine oil or transmission fluid leak is present or if the fluid in the oil cooler leaks into the engine coolant system. A black light, however, must be used with the fluorescent dye solution.

CONVERTER LEAKAGE CHECK

If there are indications that the welds on the torque converter are leaking, the converter will have to be removed and the following check made before the unit is replaced.

A leak checking tool (Fig. 2) can be made from standard parts. The tool can be used to check all converters.

1. Install the plug in the converter (Fig. 3) and expand it by tightening the wing nut. Attach the safety chains.
2. Install the air valve in the drain plug hole.
3. Introduce air pressure into the converter. Check the pressure with a tire gauge and adjust it to 20 psi.
4. Place the converter in a tank of water. Observe the weld areas for bubbles. If no bubbles are observed, it may be assumed that the welds are not leaking.

ENGINE IDLE SPEED CHECK

Check and, if necessary, adjust the engine idle speed, using the procedure given in Group 23.

If the idle speed is too low, the engine will run roughly. An idle speed that is too high will cause the vehicle to creep, have harsh engagements and harsh closed-throttle downshifts.

ANTI-STALL DASHPOT CLEARANCE CHECK

After the engine idle speed has been properly adjusted, check the anti-stall dashpot clearance. Follow the procedure given in Group 23 for checking and adjusting this clearance.

MANUAL LINKAGE CHECKS

Correct manual linkage adjustment is necessary to position the manual valve for proper fluid pressure direction to the different transmission components. Improperly adjusted manual linkage may cause crossleakage and subsequent transmission failure. Refer to Linkage Adjustments

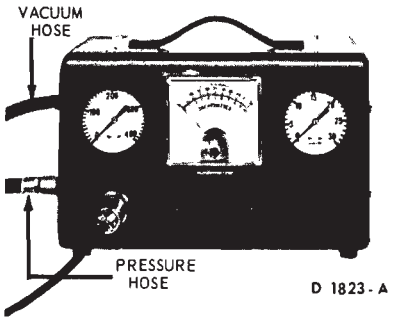


FIG. 4—Rotunda ARE-2905 Automatic Transmission Tester

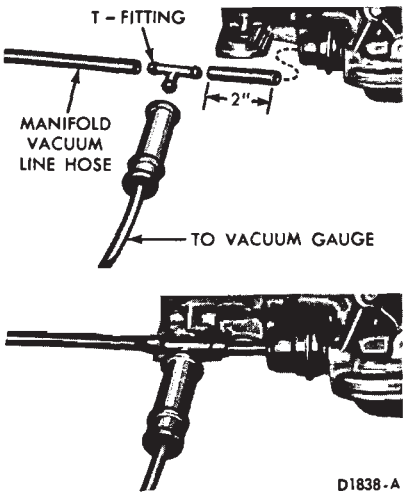


FIG. 5—Typical Vacuum Test Line Connections

in Part 17-02, 17-03 or 17-04 for detailed manual linkage adjustment procedures.

CONTROL PRESSURE CHECK

AUTOMATIC TRANSMISSIONS

When the vacuum diaphragm unit is operating properly and the downshift linkage is adjusted properly, all the transmission shifts (automatic and kickdown) should occur within the road speed limits specified in the Specifications.

If the shifts do not occur within limits or the transmission slips during shift point, the following procedure is suggested to determine engine, transmission, linkage, vacuum diaphragm unit or valve body problems.

1. Using the automatic transmission tester (Fig. 4), attach the tachometer to the engine and the vacuum gauge to the transmission vacuum line at the vacuum unit (Fig. 5).

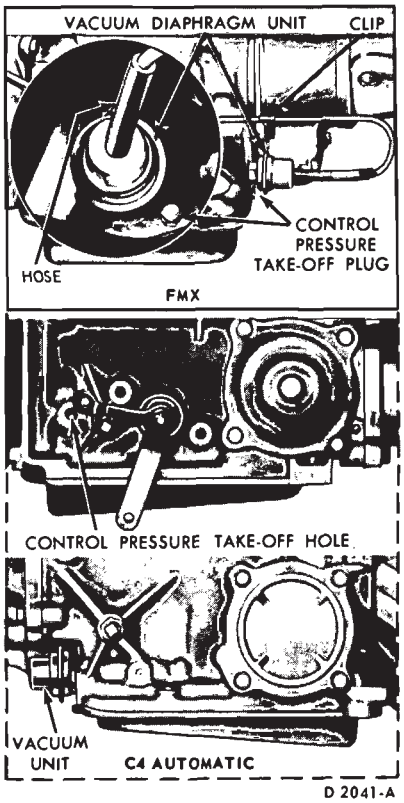


FIG. 6—Typical Vacuum Diaphragm and Control Pressure Connecting Point

2. Attach the pressure gauge to the control pressure outlet at the transmission (Figs. 6 and 7).

3. Firmly apply the parking brake and start the engine.

On a vehicle equipped with a vacuum brake release, apply the service brakes. The parking brake can not be used because the brake automatically releases when the transmission selector lever is moved to a drive position.

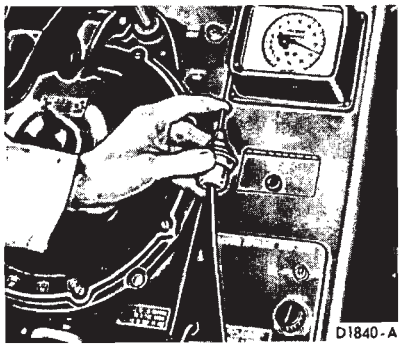


FIG. 8—Testing Transmission Vacuum Unit for Leakage

4. Adjust the engine idle speed to the specified rpm. If the engine idle speed cannot be brought within limits by adjustment at the carburetor idle adjustment screw, check the throttle and downshift linkage for a binding condition. If the linkage is satisfactory, check for vacuum leaks in the transmission diaphragm unit (Fig. 8 or 9) and its connecting tubes and hoses. Check all other vacuum operated units (such as the power brake) for vacuum leaks.

SEMI-AUTOMATIC TRANSMISSION

If the shifts do not occur within limits or the transmission clips during a shift point, the following procedure is suggested to determine engine, transmission, linkage, or valve body problems.

1. Using the automatic transmission tester (Fig. 4), attach the tachometer to the engine.

2. Attach the pressure gauge to the

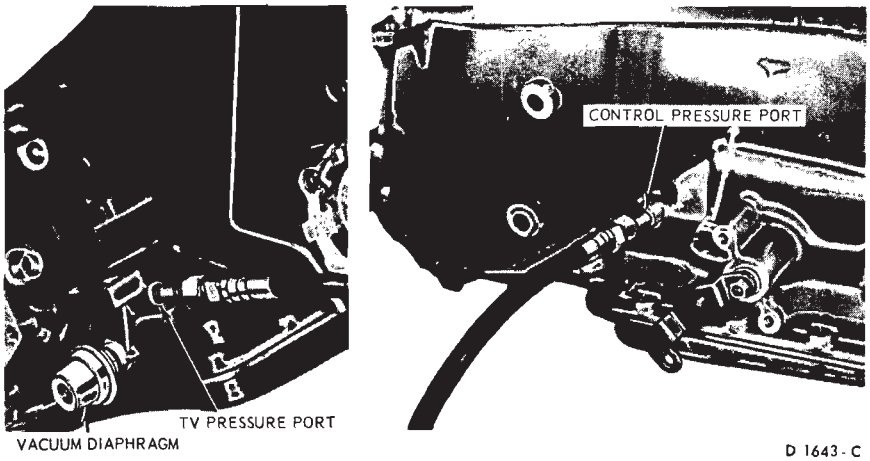


FIG. 7—Vacuum Diaphragm and Control and TV Pressure Connecting Points—C6 Transmission

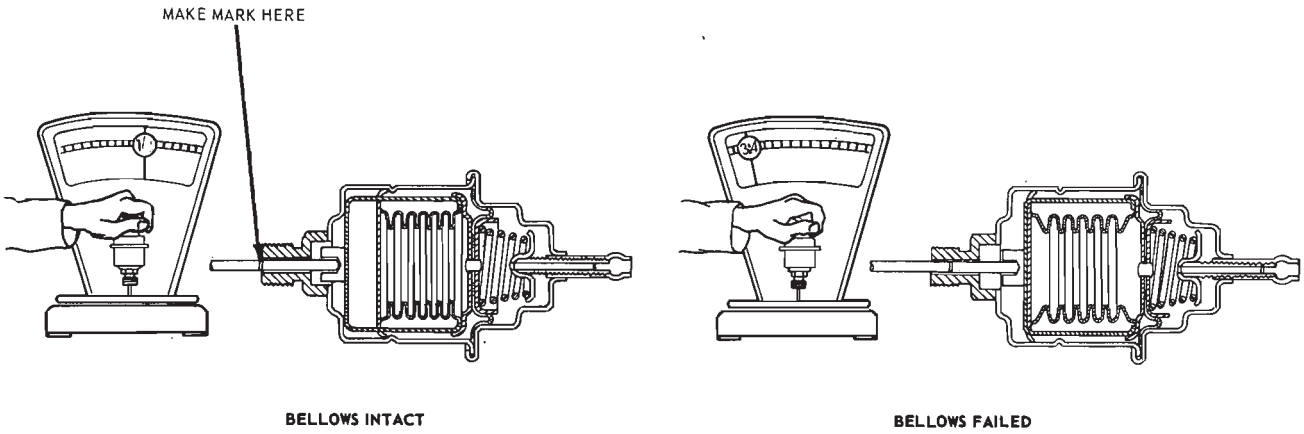


FIG. 9—Checking Vacuum Unit Bellows—Altitude Compensating Type

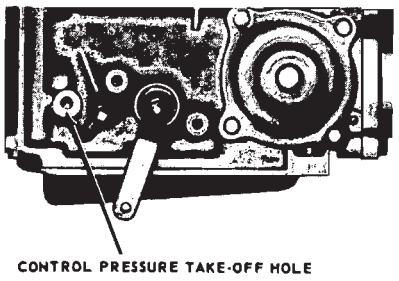


FIG. 10—Control Pressure Connecting Point—C4S Semi-Automatic Transmission

control pressure outlet at the transmission (Fig. 10).

3. Firmly apply the parking brake and start the engine.

4. Adjust the engine idle speed to the specified rpm. If the engine idle speed cannot be brought within limits by adjustment at the carburetor idle adjustment screw, check the throttle linkage for a binding condition.

VACUUM UNIT CHECK—AUTOMATIC TRANSMISSIONS

NON-ALTITUDE COMPENSATING TYPE

To check the vacuum unit for diaphragm leakage, remove the unit from the transmission. Use a distributor tester equipped with a vacuum pump (Fig. 8). Set the regulator knob so that the vacuum gauge reads 18 inches with the end of the vacuum hose blocked off.

Then connect the vacuum hose to the transmission vacuum unit. If the gauge still reads 18 inches, the vacuum unit diaphragm **is not leaking.** As the hose is removed from the transmission vacuum unit, hold a finger over the end of the control rod. When the hose is removed, the internal spring of the vacuum unit should push the control rod outward.

ALTITUDE COMPENSATING-TYPE

The vacuum diaphragm should be checked for ruptured or damaged bellows. Check the diaphragm assembly as follows:

1. Remove the diaphragm and throttle valve rod from the transmission.

2. Insert a rod into the diaphragm, making sure that the rod is bottomed in the hole. Make a reference mark on the rod where it enters the diaphragm hole.

3. Hold the assembly in such a way that the end of the rod is resting on the weighting surface of a scale (Fig. 9).

4. Gradually press down on the diaphragm assembly until the rod is pressed into the diaphragm body. If the reference mark on the rod is still visible with 12 pounds of force registered on the scale, the bellows are intact. If the mark disappears before 4 pounds of force is exerted, the bellows have failed and the diaphragm must be replaced. If the bellows are intact, then perform various pressure checks.

SHIFT POINT CHECKS—AUTOMATIC TRANSMISSIONS

Check the minimum throttle upshifts in D. The transmission should start in first gear, shift to second, and then shift to third, within the shift points specified in the specification section.

While the transmission is in third gear, depress the accelerator pedal through the detent (to the floor). The transmission should shift from third to second or third to first, depending on the vehicle speed.

Check the closed throttle downshift from third to first by coasting down from about 30 mph in third gear. The shift should occur within the limits specified in the specification section.

When the selector lever is at 2, the transmission can operate only in second gear.

With the transmission in third gear and road speed over 30 mph, the transmission should shift to second gear when the selector lever is moved from D to 2 to 1. The transmission will downshift from second or third to

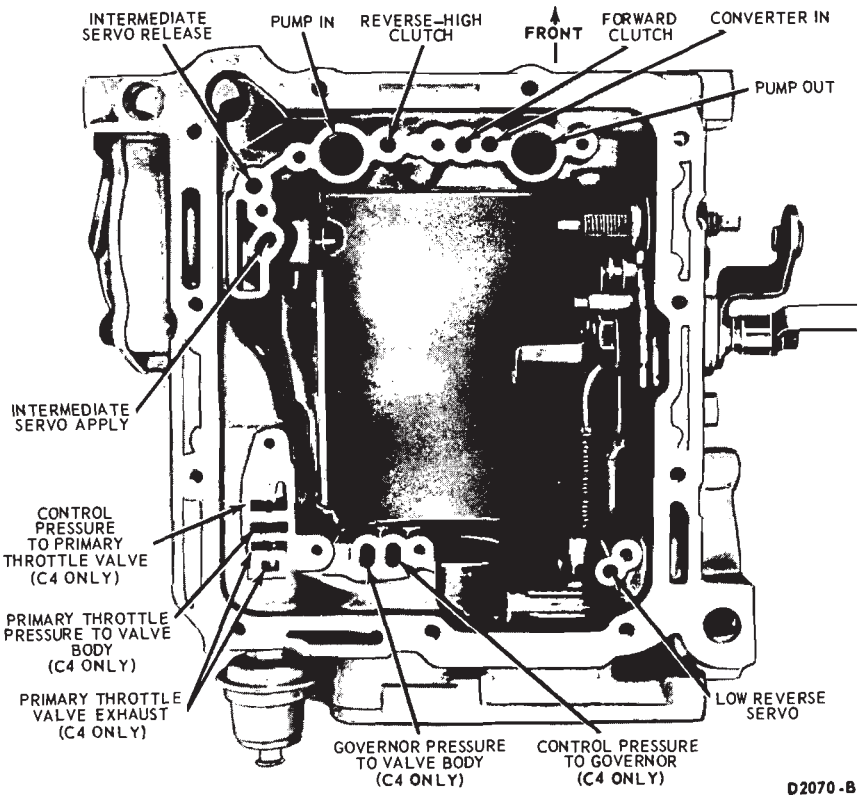


FIG. 11—Case Fluid Passage Hole Identification—C4 Automatic and C4S Semi-Automatic

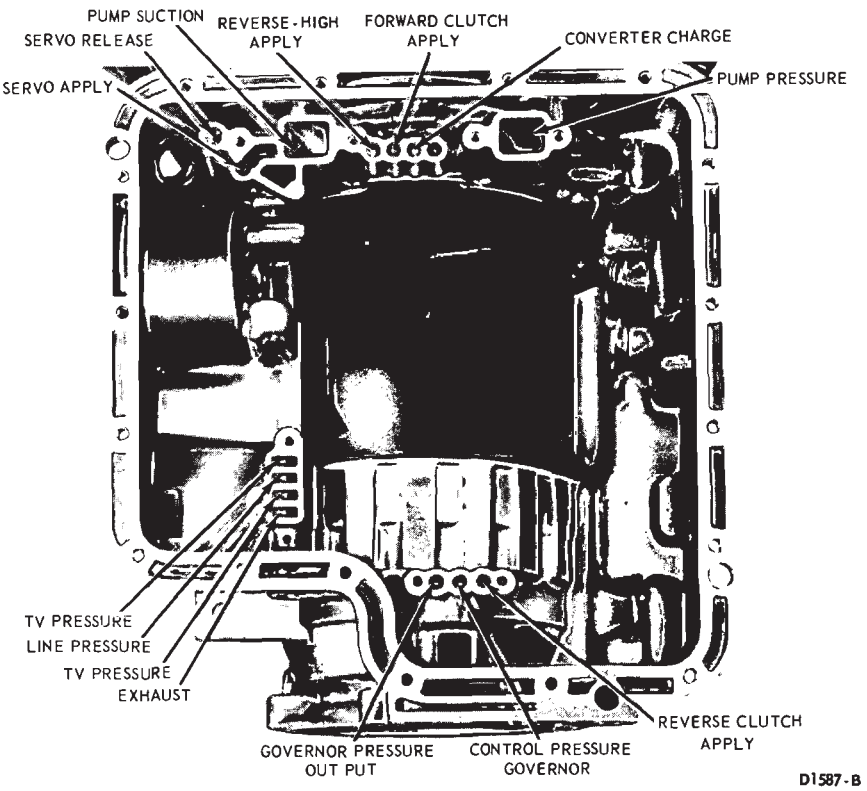


FIG. 12—Case Fluid Passage Hole Identification—C6 Automatic

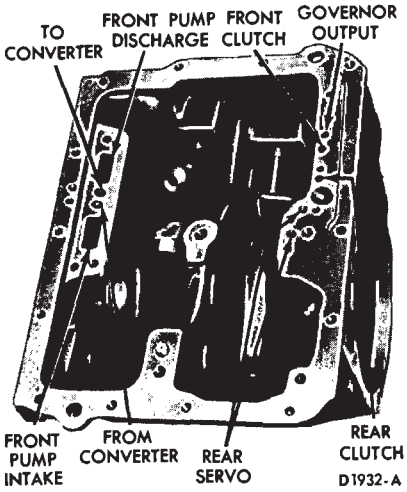


FIG. 13—Case Fluid Hole Identification—FMX Automatic

first gear when this same manual shift is made below approximately 25 mph with a C4 transmission, 30 mph with a C6 transmission or 35 mph with an FMX transmission. **This check will determine if the governor pressure and shift control valves are functioning properly.**

During the shift point check operation, if the transmission does not shift within specifications or certain gear ratios cannot be obtained, refer to the Ford Car and Truck Diagnosis Manual to resolve the problem.

AIR PRESSURE CHECKS

A NO DRIVE condition can exist, even with correct transmission fluid pressure, because of inoperative clutches or bands. On automatic transmissions, an erratic shift could be caused by a stuck governor valve. The inoperative units can be located through a series of checks by substituting air pressure for the fluid pressure to determine the location of the malfunction.

To make the air pressure checks, drain the transmission fluid and remove the oil pan and the control valve body assembly. The inoperative units can be located by introducing air pressure into the various transmission case passages (Fig. 11, 12, or 13).

HYDRAULIC SYSTEM BENCH TESTS (FMX TRANSMISSION)

After the transmission has been assembled and is ready for installation in the vehicle, check the hydraulic system to make sure it is operating properly. These hydraulic tests can be

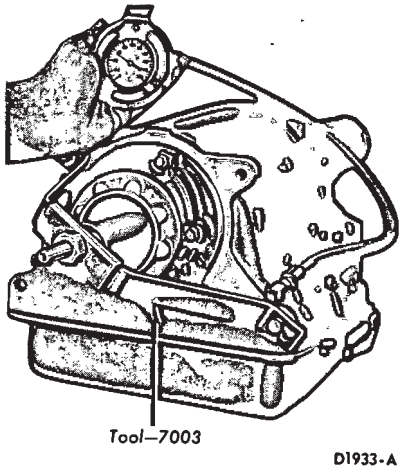


FIG. 14—Bench Testing Tool Installation—Typical

made on the bench so that most malfunctions of the system can be corrected before the transmission is installed in the vehicle.

TESTING TOOL INSTALLATION

1. Install a plug in the filler tube hole in the case or pan, and pour about four quarts of clean transmission fluid into the transmission through the speedometer gear opening.
2. Remove the vacuum diaphragm unit and the diaphragm unit control rod, and reinstall the vacuum unit if these parts had been previously installed.
3. Install the bench testing tool on the transmission.
4. Remove the 1/8-inch pipe plug at the transmission case. Turn the front pump in a clockwise direction at 75-100 rpm until a regular flow of transmission fluid leaves the hole in the transmission case. This operation bleeds the air from the pump.
5. Install the pressure gauge (77820 or T57L-77820-A) as shown in Fig. 14.

PRESSURE TESTS

Turn the front pump at 75-100 rpm and note the gauge readings. The pressure readings on the bench test must be within the limits as outlined in Figure 14, for the engine idle check.

If pressure gauge readings are within limits in all selector lever positions, install the vacuum diaphragm control rod unit.

2 COMMON ADJUSTMENTS AND REPAIRS

TRANSMISSION FLUID DRAIN AND REFILL

Normal maintenance and lubrication requirements do not necessitate periodic automatic transmission fluid changes.

If a major repair, such as a clutch band, bearing, etc., is required in the transmission, it will have to be removed for service. At this time the converter, transmission cooler and cooler lines must be thoroughly flushed to remove any dirt.

When filling a dry transmission and converter, install five quarts of fluid. Start the engine, shift the selector lever as outlined below, and check and add fluid as necessary.

Following are the procedures for partial drain and refill due to in-vehicle repair operation.

C4 OR C4S TRANSMISSION

1. On PEA and PEF models, disconnect the fluid filler tube from the transmission oil pan to drain the fluid.

On all other models, loosen the pan attaching bolts to drain the fluid from the transmission.

2. When the fluid has stopped draining from the transmission, remove and thoroughly clean the pan and the screen. Discard the pan gasket.
3. Place a new gasket on the pan, and install the pan on the transmission.
4. On PEA and PEF models, connect the filler tube to the pan and tighten the fitting securely.
5. Add three quarts of fluid to the transmission through the filler tube.
6. Run the engine at idle speed for about two minutes, and then run it at fast idle speed (about 1200 rpm) until it reaches its normal operating temperature. **Do not race the engine.**
7. Shift the selector lever through all the positions, place it at P, and check the fluid level. The fluid level should be above the ADD mark. If necessary, add enough fluid to the transmission to bring the level between the ADD and FULL marks on the dipstick. **Do not overfill the transmission.**

FMX OR C6 TRANSMISSION

1. Raise the vehicle on a hoist or jack stands.
2. Place a drain pan under the transmission.
3. Loosen the pan attaching bolts to drain the fluid from the transmission.
4. After the fluid has drained to the level of the pan flange, remove the rest of the pan bolts working from the rear and both sides of the pan to allow it to drop and drain slowly.
5. When the fluid has stopped draining from the transmission, remove and thoroughly clean the pan and the screen. Discard the pan gasket.
6. Place a new gasket on the pan, and install the pan on the transmission.
7. Add three quarts of fluid to the transmission through the filler tube.
8. Run the engine at idle speed for about two minutes, and then run it at fast idle speed (about 1200 rpm) until it reaches normal operating temperature. **Do not race the engine.**
9. Shift the selector lever through all the positions, place it at P, and check the fluid level. The fluid level should be above the ADD mark. If necessary, add enough fluid to the transmission to bring the level between the ADD and FULL marks on the dipstick. **Do not overfill the transmission.**

OIL COOLER TUBE REMOVAL AND INSTALLATION

When fluid leakage is found at the oil cooler, the cooler must be replaced. Cooler replacement is described in the Cooling System Section of Group 24.

When one or more of the fluid cooler steel tubes must be replaced, each replacement tube must be fabri-

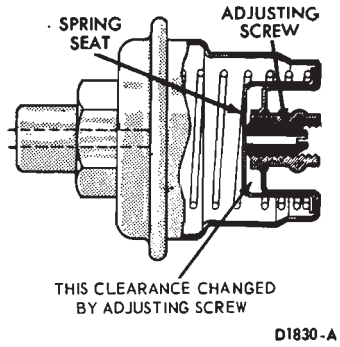


FIG. 15—Adjustable Vacuum Unit

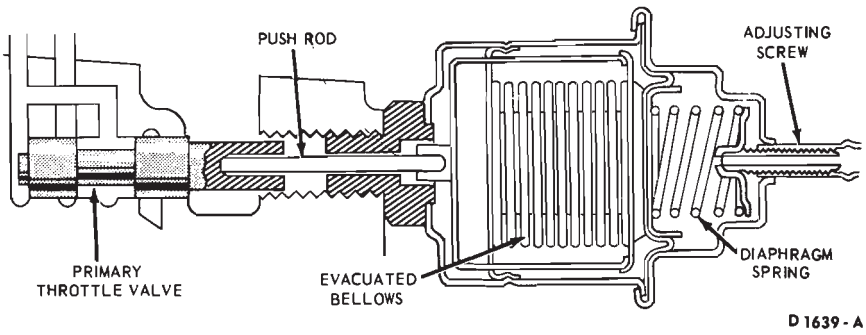


FIG. 16—Altitude Compensating Type Vacuum Diaphragm

cated from the same size steel tubing as the original line.

Using the old tube as a guide, bend the new tube as required. Add the necessary fittings, and install the tube.

After the fittings have been tightened, add fluid as needed, and check for fluid leaks.

VACUUM DIAPHRAGM ADJUSTMENT—AUTOMATIC TRANSMISSIONS

NON-ALTITUDE COMPENSATING TYPE

The C4 and C6 transmissions are equipped with an adjustable vacuum diaphragm assembly. A similar adjustable diaphragm has been released for service with the FMX transmission. However, the FMX service diaphragm is not interchangeable with that used on C4 and C6 models.

The vacuum diaphragm assembly has an adjusting screw in the vacuum hose connecting tube (Fig. 15).

The inner end of the screw bears against a plate which in turn bears against the vacuum diaphragm spring.

All readings slightly high or all readings slightly low may indicate the vacuum unit needs adjustment to correct a particular shift condition.

For example, on a C4 transmission, if the pressure at 10 inches of vacuum was 120 psi and the pressure at 1.0 inch of vacuum was 170 psi, and upshifts and downshifts were harsh, a diaphragm adjustment to reduce the diaphragm assembly spring force would be required.

If the pressure readings are low, an adjustment to increase diaphragm spring force is required.

To increase control pressure, turn the adjusting screw in clockwise to reduce control pressure, back the adjusting screw out by turning it counterclockwise. **One complete turn** of the adjusting screw (360 degrees) will change idle line control pressure approximately 2-3 psi. After the adjustment install the vacuum line and make all the pressure checks as outlined in the Specification Section.

The diaphragm should not be adjusted to provide pressure below the ranges shown in the Specification Section in order to change shift feel. To do so could result in soft or slipping shift points and damage to the transmission.

ALTITUDE COMPENSATING TYPE

The altitude-compensating diaphragm is provided with an adjustment screw located in the vacuum connecting tube (Fig. 16). The adjustable feature allows control and TV pressures to be adjusted (within limits) to correct soft or harsh shift feel. Control and TV pressures are increased or decreased by turning the adjusting screw.

Before replacing or adjusting the diaphragm, it must first be determined that the pressure or vacuum is actually out of specification and that the cause of the problem is not due to other items within the transmission or vacuum connecting lines.

If the tests outlined in the Specifications have been performed and pressures are within specification but shift feel is unsatisfactory, or if the pressure is too high or too low at 10 inches of vacuum, the vacuum diaphragm may be adjusted to improve the shift feel.

If shifts are excessively harsh, the diaphragm should be adjusted to reduce control pressure by backing off the adjusting screw (counterclockwise). If shift quality is extremely soft, control pressure should be increased by turning the adjusting screw inward (clockwise).

To adjust the vacuum diaphragm to compensate for harsh shift quality, first check control pressure in D, 2 and 1 at 10 inches manifold vacuum and note the pressure reading obtained. Remove the T-fitting from the vacuum hose and back off the adjusting screw (counterclockwise) by one full turn. Each full turn will reduce control pressure by approximately 2 1/2 psi at 10 inches of vacuum. Test the vehicle for shift feel. If shift quality is still harsh, a further adjustment should be made to reduce control pressure. However, control pressure should not be reduced below the specification shown for 10 inches of vacuum. If control pressure has been reduced to the low limit and shift feel is still excessively harsh, the clutches and band should be checked for correct operation.

To adjust the vacuum diaphragm to compensate for extremely soft shifts, record the control pressure reading at 10 inches of vacuum in D, 2 and 1, then make an initial adjustment of one full turn inward (clockwise). Test the vehicle for shift feel and again adjust the diaphragm, if necessary. Control pressure at 10 inches of vacuum must not exceed the high limit shown in the Specification Section.

When the necessary adjustments have been completed and shift feel is satisfactory, repeat all the tests outlined in the Specification Section. All tests must be within specifications. The adjustable vacuum unit must not be used to allow for adjusting control or TV pressures that are out of specifications. If these pressures are found to be out of specifications the cause must be determined and corrected before making any adjustment.

VACUUM DIAPHRAGM REMOVAL AND INSTALLATION

1. Remove the transmission vacu-

um unit with the tool shown in Figure 17.

On a Maverick, remove the vacuum unit with a thin walled 3/4 inch open end wrench.

2. Remove the vacuum unit gasket and the control rod.

3. Install the vacuum unit, gasket and control rod in the case. Using a torque wrench and the tool shown in Figure 17, torque the vacuum unit to specification.

On a Maverick, use a thin walled 3/4 inch open end wrench to install the vacuum unit.

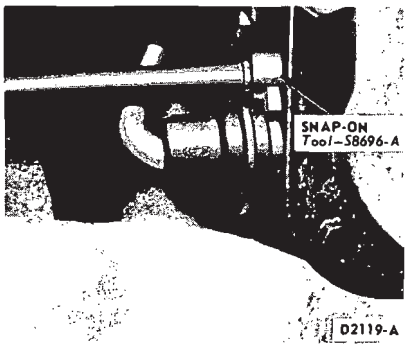


FIG. 17—Removing or Installing Vacuum Diaphragm

MANUAL SHIFT LINKAGE GROMMET REPLACEMENT—COLUMN SHIFT

The manual lever assembly on vehicles equipped with a column shift incorporates an oil impregnated plastic grommet in the end of the lever arm. A special tool T67P-7341-A is required to install the grommet in the manual lever, and to install the manual linkage rod into the grommet. Remove and install the grommet as follows:

1. Place the lower jaw of the tool between the manual lever and the control rod. Position the stop pin against the end of the control rod (Fig. 18) and force the rod out of the grommet. Remove the grommet from the manual lever by cutting off the large shoulder with a sharp knife. **The grommet must be removed from the manual lever and a new one installed each time the rod is disconnected.**

2. Before installing a new grommet, adjust the stop pin to 1/2 inch and coat the outside of the grommet with lubricant. Then, place the grommet on the stop pin and force it into the manual lever hole. Turn the grommet several times to be sure it is properly seated.

3. Readjust the stop pin to the height shown in Fig. 18. The pin height is determined by the length of the rod end which is to be installed into the grommet. If the pin height is not adjusted, the control rod may be pushed too far through the grommet causing damage to the grommet retaining lip.

4. With the pin height properly adjusted, position the control rod on the tool and force the rod into the grommet until the groove in the rod seats on the inner retaining lip of the grommet.

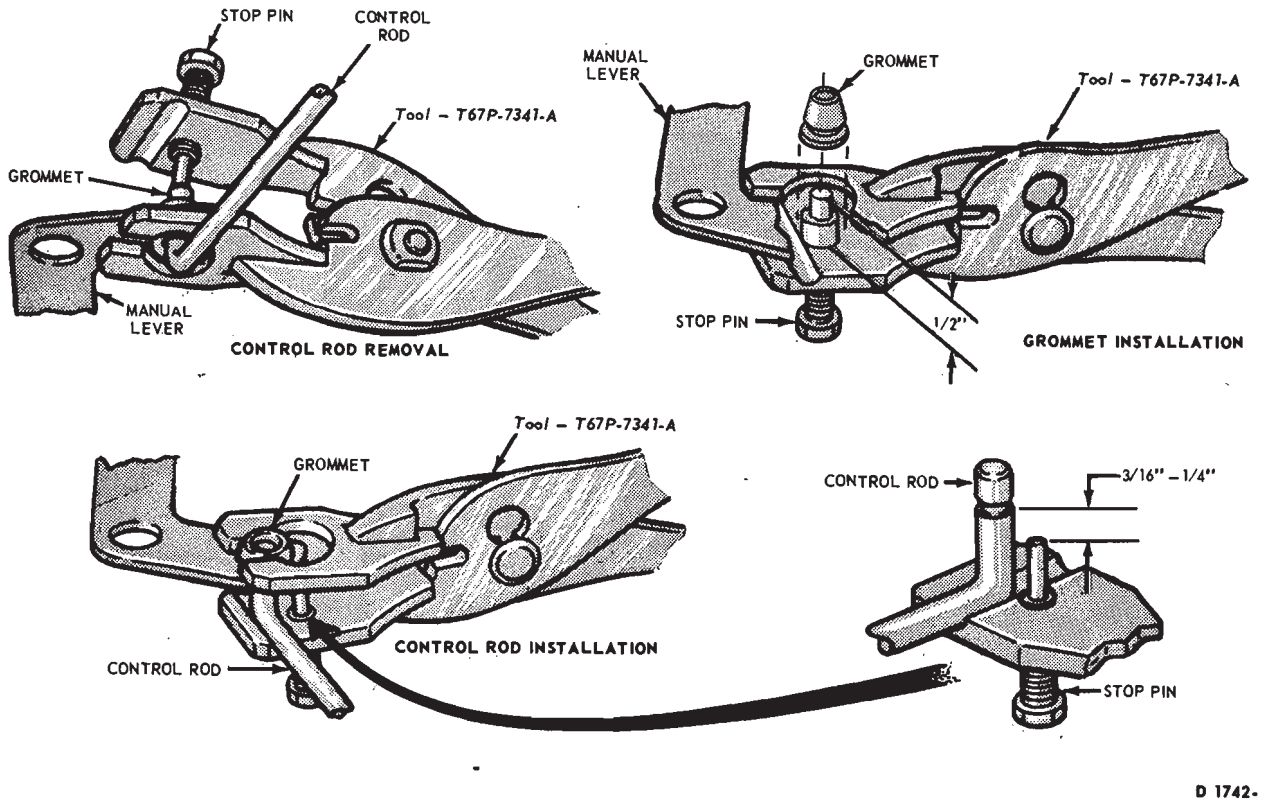


FIG. 18—Removing or Installing Shift Linkage Grommet

3 CLEANING AND INSPECTION

CLEANING

TRANSMISSION

Clean the parts with suitable solvent and use moisture-free air to dry off all the parts and clean out oil passages.

The composition clutch plates, control valve body-to-screen gasket, bands and synthetic seals should not be cleaned in a vapor degreaser or with any type of detergent solution. To clean these parts, wipe them off with a lint-free cloth. New clutch plates or bands should be soaked in transmission fluid for fifteen minutes before the plates or bands are assembled.

CONVERTER

The converter cannot be disassembled for cleaning. If there is reason to believe that the converter contains an excessive amount of foreign material, it should be thoroughly cleaned. See the instructions provided with the Rotunda Automatic Transmission Torque Converter and Cooler Cleaner LRE-60081.

OIL COOLER

When a clutch or band failure or other internal trouble has occurred in the transmission, any metal particles or clutch plate or band material that may have been carried into the cooler should be removed from the system by flushing the cooler and lines before the transmission is put back into service. In no case should an automatic transmission having a clutch or band failure or other internal trouble resulting in fluid contamination, be put back into service without first flushing the transmission oil cooler.

To flush the oil cooler, follow the instructions provided with the Rotunda Automatic Transmission Torque Converter and Cooler Cleaner LRE-60081.

INSPECTION

TURBINE AND STATOR END PLAY CHECK

A special tool (Fig. 19) must be used to check the condition of the converter. This special tool is used to check the turbine and stator end play and the operation of the one-way stator clutch.

1. Insert the tool (Fig. 19) into the converter pump drive hub until it bottoms.
2. Install the guide over the converter pump drive hub.
3. Expand the split fiber bushing in the turbine spline by tightening the adjusting nut. Tighten the adjusting nut until the tool is securely locked into the spline.
4. Attach a dial indicator to the tool (Fig. 20 or 21). Position the indicator button on a converter pump drive hub, and set the dial face at 0 (zero).
5. Lift the tool upward as far as it will go and note the indicator reading. The indicator reading is the total end play which the turbine and stator share. If the total end play exceeds the limits specified in the Specifications, replace the converter unit.
6. Loosen the adjusting nut to free the split bushing, and then remove the tool from the converter.

STATOR ONE-WAY CLUTCH CHECK

1. Install the stator outer race holding tool in one of the four holes provided in the stator (Fig. 20 or 21).
2. Insert the tool in the converter pump drive hub. As the tool enters the converter, the pins will engage the stator clutch inner race spline.
3. Place a torque wrench on the tool (Fig. 20 or 21). The tool (and stator inner race) should turn freely clockwise (from the pump drive hub inside the converter). It should lock up and hold a 10 ft-lb pull when the wrench is turned counterclockwise. Try the clutch for lockup and hold in at least five different locations around the converter. **On the C4, C4S or C6 Automatics, the metal ring holding the locking tool will have to be held by hand during this check.**
4. If the clutch fails to lock up and hold a 10 ft-lb torque, replace the converter unit.

STATOR TO IMPELLER INTERFERENCE CHECK

1. Position the front pump assembly on a bench with the spline end of the stator shaft pointing up (Fig. 22).
2. Mount a converter on the pump so that the splines on the one-way clutch inner race engage the mating splines of the stator support, and the converter hub engages the pump drive gear.
3. While holding the pump stationary, try to rotate the converter counterclockwise. The converter should rotate freely without any signs of interference or scraping within the converter assembly.
4. If there is an indication of scraping, the trailing edges of the stator blades may be interfering with the leading edges of the impeller blades. In such cases, replace the converter.

STATOR TO TURBINE INTERFERENCE CHECK

1. Position the converter on the bench front side down.
2. Install a front pump assembly to engage the mating splines of the stator support and stator, and pump drive gear lugs.
3. Install the input shaft, engaging the splines with the turbine hub (Fig. 23).
4. While holding the pump stationary, attempt to rotate the turbine with the input shaft. The turbine should rotate freely in both directions without any signs of interference or

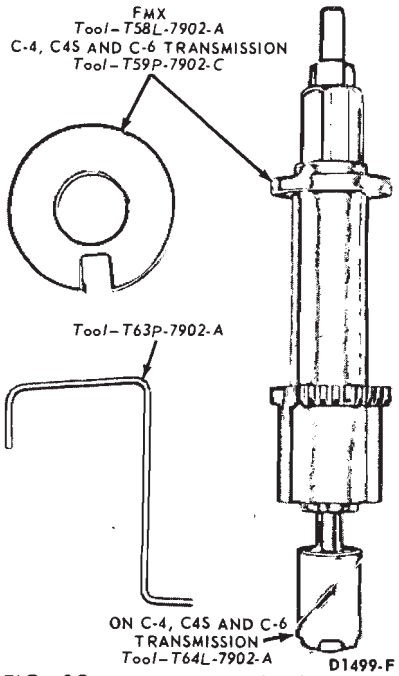
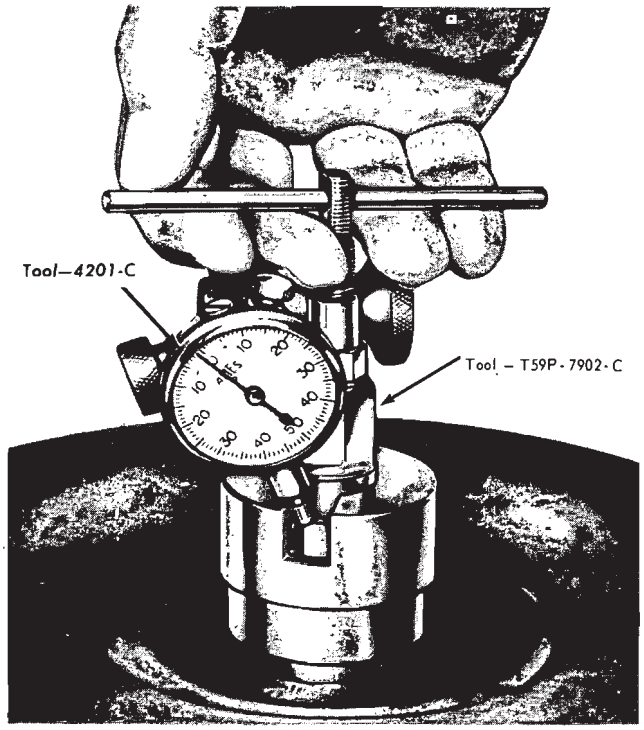
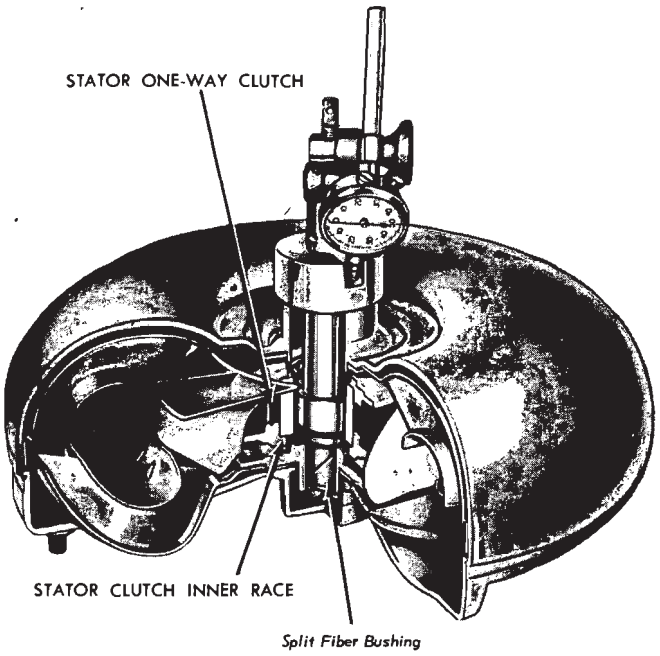
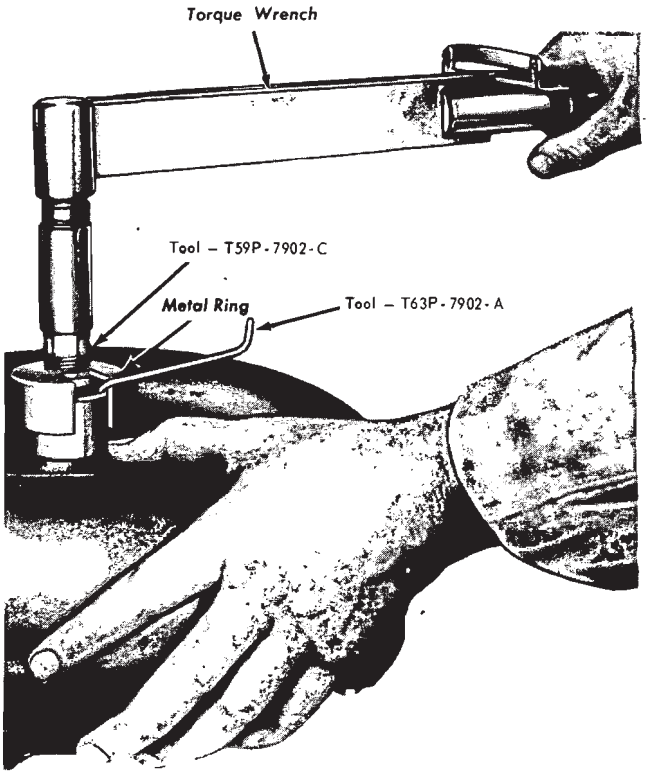


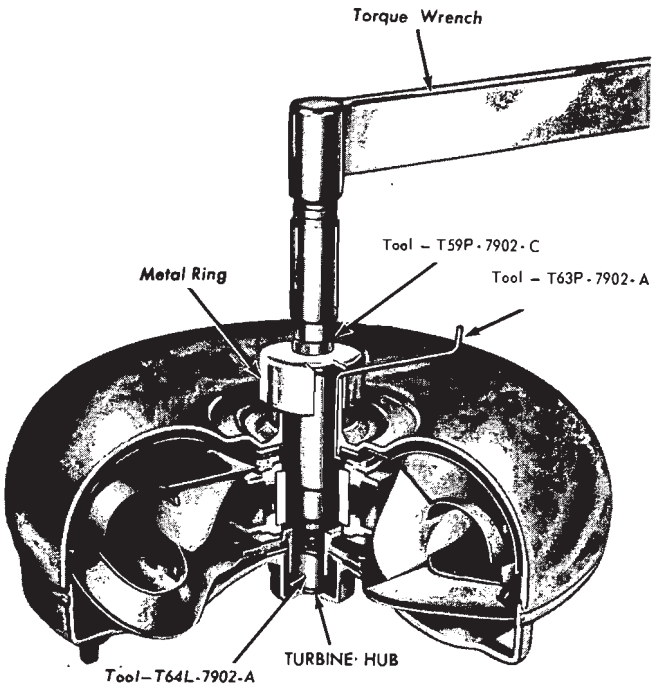
FIG. 19—Converter Checking Tool





END PLAY CHECK





STATOR CLUTCH CHECK

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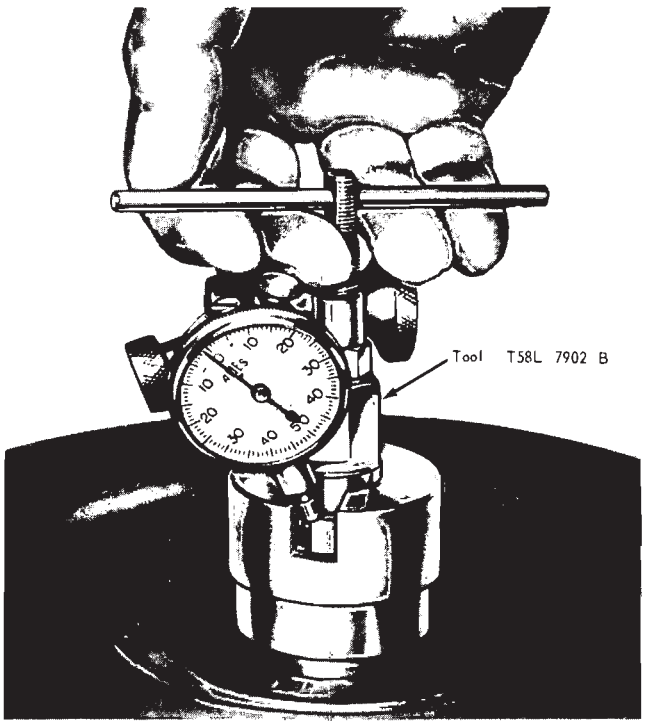
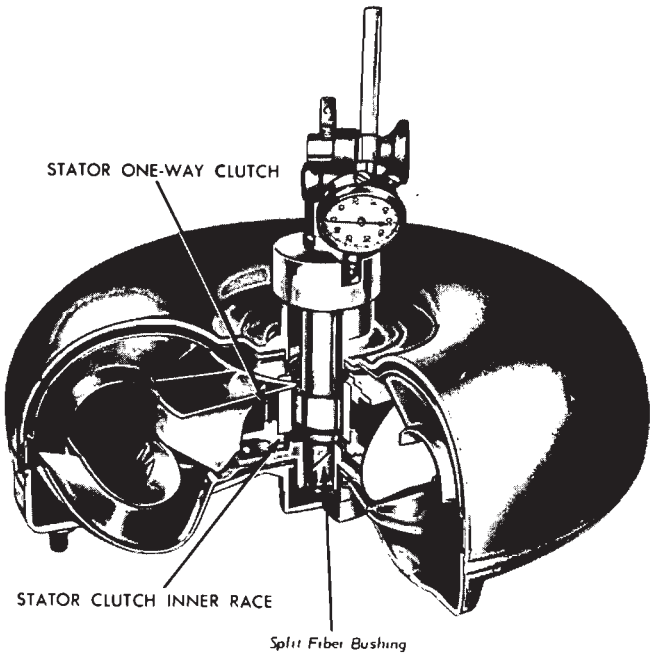
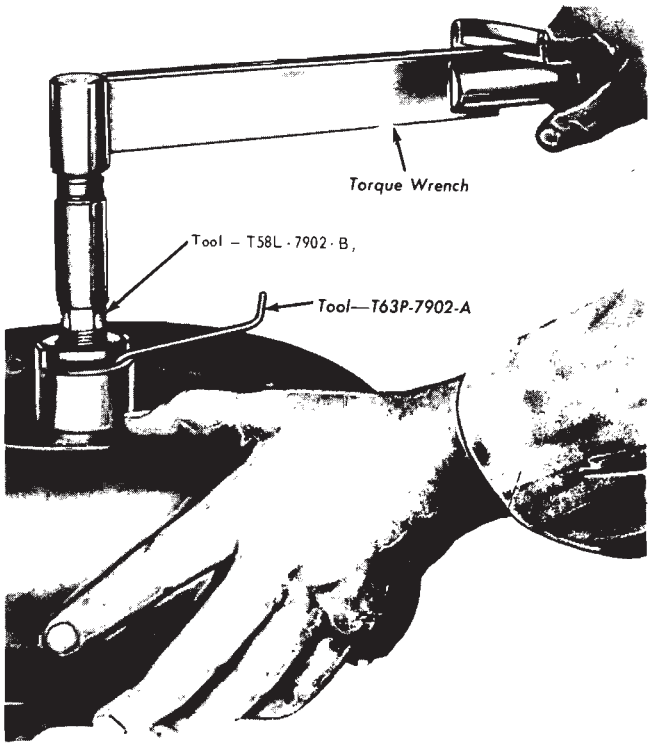
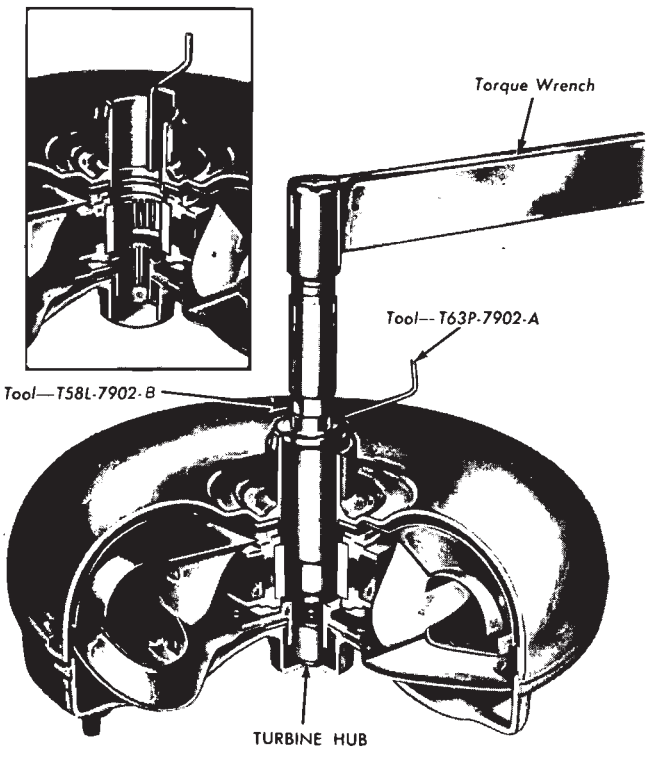
FIG. 20—Typical Converter Checking Tool—C4, C4S and C6 Transmissions





END PLAY CHECK





STATOR CLUTCH CHECK

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FIG. 21—Typical Converter Checking Tool—FMX Transmission

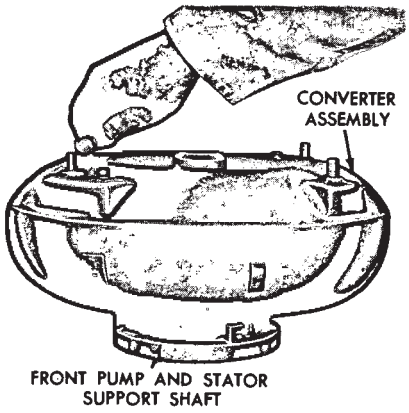


FIG. 22—Stator to Impeller Interference Check

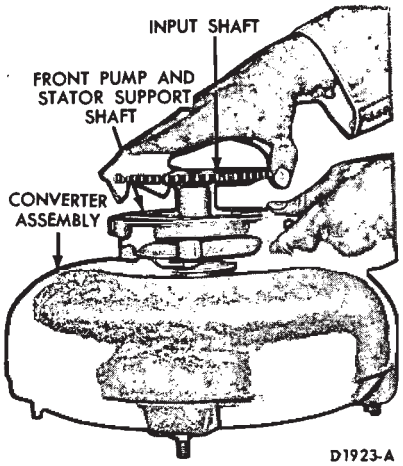


FIG. 23—Stator to Turbine Interference Check

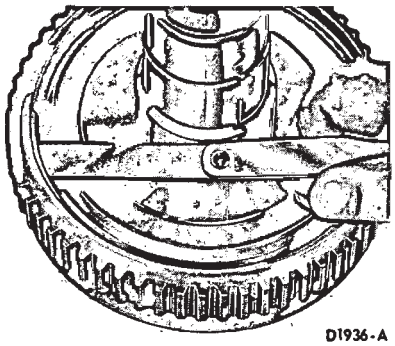


FIG. 24—Checking Output Shaft Snap Ring Clearance

scraping noise.

5. If interference exists, the stator front thrust washer may be worn, allowing the stator to hit the turbine. In such cases, the converter must be replaced.

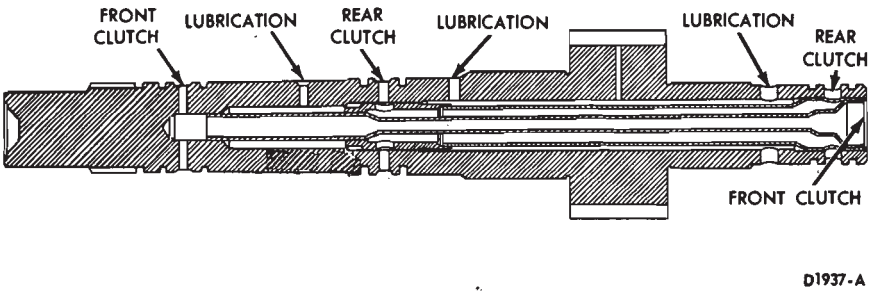


FIG. 25—Primary Sun Gear Shaft—Cross Sectional View

The converter crankshaft pilot should be checked for nicks or damaged surfaces that could cause interference when installing the converter into the crankshaft. Check the converter front pump drive hub for nicks or sharp edges that would damage the pump seal.

OUTPUT SHAFT AND PRIMARY SUN GEAR SHAFT (FMX TRANSMISSION)

1. Inspect the thrust surfaces and journals for scores. Inspect the internal gear for broken or worn teeth.

2. Inspect the ring grooves for burrs.

3. Inspect the keyway and drive ball pocket for wear, and inspect the splines for burrs, twist or wear.

4. Inspect the external parking gear teeth for damage and the speedometer drive gear teeth for burrs.

5. If either the output shaft or ring gear has been replaced, place the assembled unit with the gear face down on the bench, push the shaft downward, and check the clearance between the top of the snap ring and its groove (Fig. 24). If this clearance exceeds 0.002 inch, replace the snap ring with a thicker ring to reduce the clearance to less than 0.002 inch. Selective snap rings are available in several thicknesses for this purpose.

6. Inspect the rubber seal and stop ring at the front of the output shaft spline. If wear or damage is evident, replace the parts.

7. Inspect the primary sun gear for broken or worn teeth. Inspect all thrust surfaces and journals for scores. Check all fluid passages (Fig. 25) for obstructions and leakage. Inspect the seal ring grooves for burrs.

8. Inspect the sun gear shaft splines for burrs and wear.

9. Check the fit of the seal rings in the grooves of the shaft. The rings should enter the grooves freely without bind.

10. Check the fit of the seal rings in their respective bores. If equipped with cast iron seal rings, a clearance of 0.002-0.009 inch should exist between the ends of the rings.

11. Install the seal rings on the shaft, and check for free movement in the grooves.

PINION CARRIER, ONE-WAY CLUTCH AND CENTER SUPPORT (FMX TRANSMISSION)

1. Inspect the clutch outer race, inner race, band surface, pinion gears, bearings, and thrust washer (Fig. 26) for roughness.

2. Inspect the center support bushing for roughness.

3. Inspect the one-way clutch cage rollers and springs for excessive wear or damage.

PINION CARRIERS (C4, C4S OR C6 TRANSMISSIONS)

Individual parts of the planet carriers are not serviceable.

1. The pins and shafts in the planet assemblies should be checked for loose fit and/or complete disengagement. Use a new planet assembly if either condition exists. Before installing a planet assembly, the shaft retaining pins should be checked for adequate staking. If staking does not appear adequate, the pins should be restaked before installation. When restaking, the retaining pins must not be driven into the carrier any further than 0.040 inch below the surface of the carrier.

2. Inspect the pinion gears for damaged or excessively worn teeth.

3. Check for free rotation of the pinion gears.

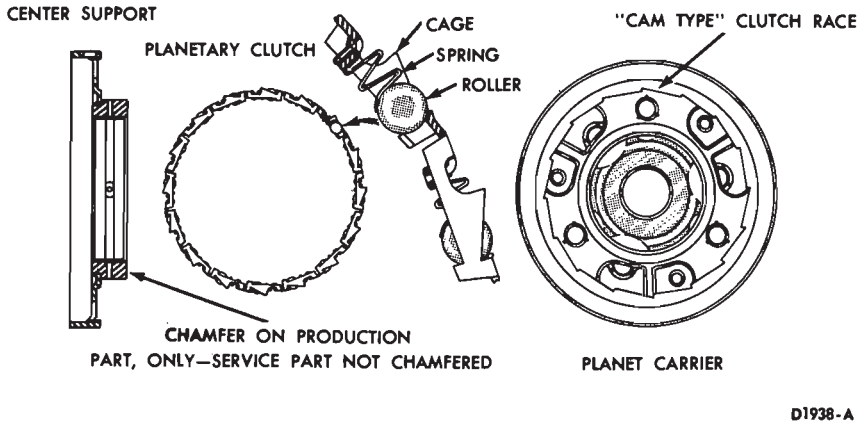


FIG. 26—Roller Type Planetary Clutch, Carrier and Center Support

EXTENSION HOUSING

1. Inspect the housing for cracks. Inspect the gasket surface for burrs or warpage.
2. Inspect the bushing for scores or wear.
3. Inspect the rear seal for hardness, cracks, or wear. If the seal shows wear or deterioration, replace the seal.
4. Inspect the seal counterbore and remove all burrs and scores with crocus cloth.

REAR CLUTCH (FMX) AND REVERSE-HIGH CLUTCH (C4, C4S AND C6 TRANSMISSIONS)

1. Inspect the drum band surface, the bushing, and thrust surfaces for scores. Minor scores may be removed with crocus cloth. **Badly scored parts must be replaced.**

Inspect the clutch piston bore and the piston inner and outer bearing surfaces for scores. Check the air bleed ball valve in the clutch piston for free movement. Check the orifice to make sure it is not plugged.

2. Check the fluid passages for obstructions. All fluid passages must be clean and free of obstructions.
3. Inspect the clutch plates for wear and scoring and check the plates for fit on the clutch hub serrations. Replace all plates that are badly scored, worn or do not fit freely in the hub serrations.
4. Inspect the clutch pressure plate for scores on the clutch plate bearing surface. Check the clutch release spring(s) for distortion.
5. On an FMX transmission, inspect the needle bearing for worn rollers.

FRONT CLUTCH (FMX) AND FORWARD CLUTCH (C4, C4S OR C6 TRANSMISSIONS)

1. Inspect the clutch cylinder thrust surfaces, piston bore, and clutch plate serrations for scores or burrs. Minor scores or burrs may be removed with crocus cloth. Replace the clutch cylinder if it is badly scored or damaged.
2. Check the fluid passage in the clutch cylinder for obstructions. Clean out all fluid passages. Inspect the clutch piston for scores and replace if necessary. Inspect the piston check ball for freedom of movement and proper seating (Fig. 27).
3. Check the clutch release spring for distortion and cracks. Replace the spring if it is distorted or cracked.
4. Inspect the composition and the steel clutch plates and the clutch pressure plate for worn or scored bearing surfaces. Replace all parts that are deeply scored.
5. On FMX, C4 and C4S transmissions, check the clutch plates for flatness and fit on the clutch hub serrations. Discard any plate that does not slide freely on the serrations or that is not flat.
6. Check the clutch hub thrust surfaces for scores and the clutch hub splines for wear.
7. On an FMX transmission, inspect the turbine shaft bearing surfaces for scores. If excessive clearance or scores are found, discard the unit.

Check the splines on the turbine shaft for wear and replace the shaft if the splines are excessively worn. Inspect the bushing in the turbine shaft for scores. On a C4, C4S or C6 Automatic transmission, check the input shaft for damaged or worn splines.

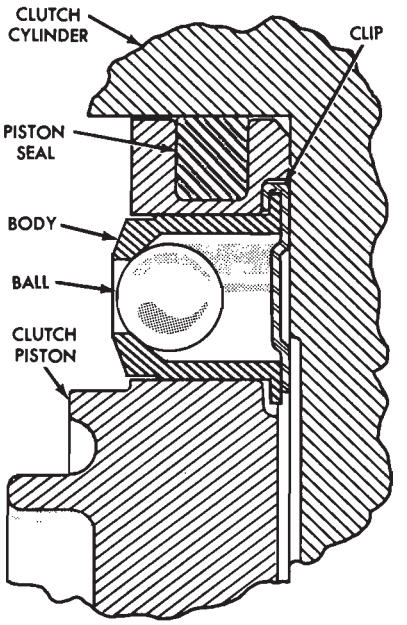


FIG. 27—Clutch Piston Check Valve

FRONT PUMP AND STATOR SUPPORT

1. Inspect the mating surfaces of the pump body and cover for burrs.
2. Inspect the drive and driven gear bearing surface for scores, and check the gear teeth for burrs. Inspect the stator support splines for burrs and wear.
3. Check the fluid passages for obstructions.
4. If any parts other than the stator support are found defective, replace the pump as a unit. Minor burrs and scores may be removed with crocus cloth. The stator support is serviced separately.
5. On a C4, C4S or C6 Automatic transmission, check the oil ring grooves in the stator support for nicks, burrs or damaged edges. On a C6 transmission, check the large seal ring groove of the pump body for damage. Check the gasket mating surface of the pump body for damage.

REAR SUPPORT (FMX TRANSMISSION)

1. Inspect the gasket mating surfaces for damage.
2. Inspect the support bushing for scores.

3. Inspect the rear support fluid passages for obstructions.
4. Check the fit of the fluid tubes in the support.

PRESSURE REGULATOR (FMX TRANSMISSION)

1. Inspect the regulator body and cover mating surface for burrs.
2. Check all fluid passages for obstructions.
3. Inspect the control pressure and converter pressure valves and bores for burrs and scores. Remove all burrs carefully with crocus cloth.
4. Check free movement of the valves in their bores. The valves should fall freely into the bores when both the valve and bore are dry.
5. Inspect the valve springs and spacers for distortion.

CONTROL VALVE BODY

1. Clean all parts thoroughly in clean solvent, and then blow them dry with moisture-free compressed air.

If the valve body-to-screen gasket is removed on a C4 or C6 Automatic, the gasket should not be cleaned in a degreaser, solvent or any type of detergent solution. To clean the gasket, wipe it off with a lint-free cloth.

2. Inspect all valve and plug bores for scores. Check all fluid passages for obstructions. Inspect the check valve for free movement. Inspect all mating surfaces for burrs or distortion. Inspect all plugs and valves for burrs and scores. **Crocus cloth can be used to polish valves and plugs if care is taken to avoid rounding the sharp edges of the valves and plugs.**
3. Inspect all springs for distortion. Check all valves and plugs for free movement in their respective bores. Valves and plugs, when dry, must fall from their own weight in their respective bores.
4. On a C6 transmission, inspect the separator plate screen for obstructions. The screen must be clean and free of foreign material. If it is contaminated, it should be removed from the separator plate, cleaned in a suitable solvent, and thoroughly blown out with compressed air.
5. Roll the manual valve on a flat surface to check it for a bent condition.

GOVERNOR (AUTOMATIC TRANSMISSIONS)

1. Inspect the governor valves and bores for scores. Minor scores may be removed from the valves with crocus cloth. Replace the governor if the valves or body is deeply scored.
2. Check for free movement of the valves in the bores. The valves should slide freely of their own weight in the bores when dry. Inspect fluid passages in the valve body and counterweight for obstructions. **All fluid passages must be clean.**
3. Inspect the mating surfaces of the governor body and governor distributor (C4 or C6 Automatic) for burrs and distortion. Mating surfaces must be smooth and flat.
4. Check the mating surface of the governor valve and the counterweight on a FMX transmission for burrs or scratches.
5. When cleaning the governor assembly (C4 Automatic), the oil screen should be removed from the collector body, cleaned in a suitable solvent and thoroughly blown out with compressed air.

FRONT SERVO (FMX) AND INTERMEDIATE SERVO (C4, C4S AND C6 TRANSMISSIONS)

1. Inspect the servo bore for cracks and the piston bore and the servo piston stem for scores. Check fluid passages for obstructions. Replace seals that are damaged.
2. On an FMX transmission, check the actuating lever for free movement, and inspect it for wear. If necessary to replace the actuating lever or shaft, remove the retaining pin and push the shaft out of the bracket.

Inspect the adjusting screw threads and the threads in the lever for damage.

3. Check the servo spring and servo band strut(s) for distortion.
4. Inspect the cover seal and gasket cover sealing surface for damage.

REAR SERVO (FMX) AND LOW-REVERSE SERVO (C4 OR C4S TRANSMISSION)

1. Inspect the servo body for cracks and the piston bore for scores.
2. Check the fluid passages for obstructions.
3. Inspect the band and the struts for distortion. Inspect the band ends for cracks.
4. Inspect the servo spring for distortion.
5. Inspect the band lining for excessive wear and bonding to the metal band.
6. On an FMX transmission, check the servo body to case mating surface for burrs. Check the accumulator piston and the check valve for freedom of movement. Check the actuating lever socket for scores.
7. Replace seals that are damaged.

CASE

Inspect the case for cracks and stripped threads. Inspect the gasket surfaces and mating surfaces for burrs. Check the vent for obstructions, and check all fluid passages for obstructions and leakage (Figs. 11, 12 and 13).

Inspect the case bushing for scores. Check all parking linkage parts for wear or damage.

ONE-WAY CLUTCH

1. Inspect the outer and inner races for scores or damaged surface area where the rollers contact the races. If the outer race on the C6 transmission is damaged the low-reverse clutch hub must be replaced.
2. Inspect the rollers and springs for excessive wear or damage.
3. Inspect the spring and roller case for bent or damaged spring retainers.

4 SPECIAL TOOLS

Ford Tool No.	Former No.	Description
ARE-29-05		Automatic Transmission Tester
TOOL-S8696-A		Vacuum Diaphragm Wrench
LRE-60081		Torque Converter and Cooler Cleaner
TOOL-4201-C	4201-C	Differential Backlash and Runout Gauge, with Universal Bracket, Dial Indicator and Bracket
TOOL-7003	7003	Bench Test Turning Tool
T67P-7341-A		Remover Replacer Trans. Shift Linkage Insulators
T58L-7902-B		Welded Converter Sprag Driver and Gauge Post
T59P-7902-C		Welded Converter Sprag Driver and Gauge Post
T63P-7902-A		Converter Stator Check Adapter
T64L-7902-A		Welded Converter Sprag Driver and Gauge Post Adapter Kit for T59P-7902-C
T57L-77820-L	77565	400 lb Pressure Gauge

CD2120-A

PART 17-02 C4 Automatic and C4S Semi-Automatic Transmissions

Does NOT Apply To Mercury, Lincoln Continental, Thunderbird and Continental (Mark III)

1 DESCRIPTION

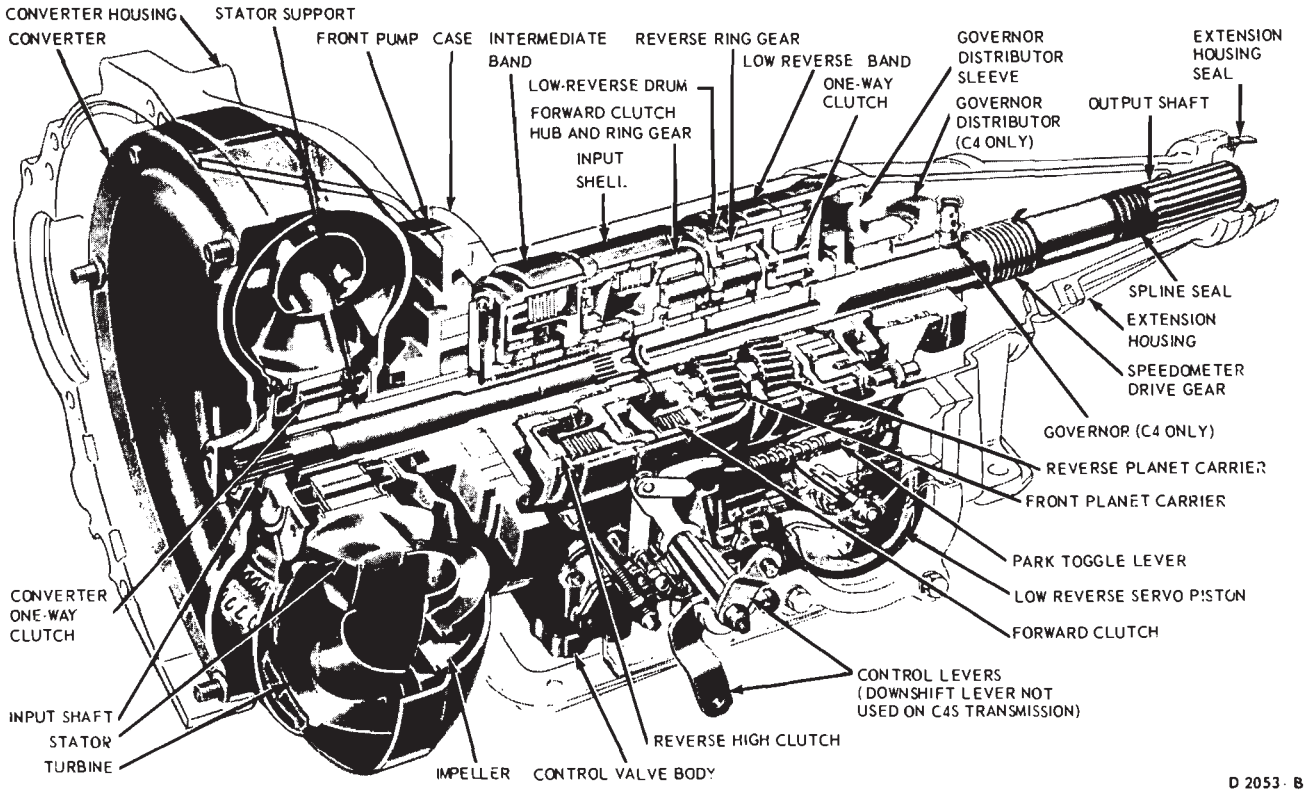


FIG. 1—C4 Automatic and C4S Semi-Automatic Transmission

DESCRIPTION

Figure 1 shows the location of the converter, front pump, clutches, gear train and most of the internal parts used in the C4 automatic and C4S semi-automatic transmission. The identification tag (Fig. 2) is located under the lower front intermediate servo cover bolt. The tag shows the model prefix and suffix, assembly part numbers, and the built date code. The first line on the tag shows the transmission model prefix and suffix. A number appearing after the suffix (Fig. 2) indicates that the internal parts in the transmission have been changed after initial production start-up. For example, a PEA-A model transmission that has been changed internally would read PEA-A1. Both transmissions are basically the same, but some service parts in the PEA-A1 transmission are slightly different than the PEA-A transmission. Therefore, it is important that the codes on the transmission identification tag be checked when ordering parts or making inquiries about the transmission.

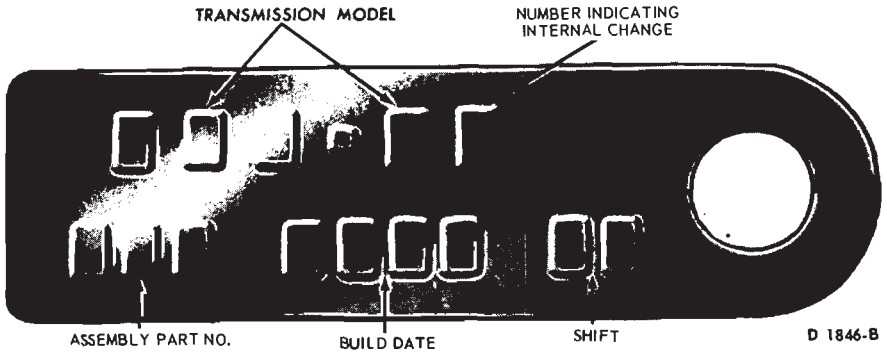


FIG. 2—Identification Tag

The C4 automatic transmission is a three speed unit capable of providing automatic upshifts and downshifts through the three forward gear ratios, and also capable of providing manual selection of first and second gears.

The C4S semi-automatic transmission is a manually operated power shift transmission which does not require a clutch pedal. The transmission is similar to the C4 fully automatic transmission except for changes in the control valve body and that the vacuum diaphragm, throttle rod, governor and the inner and outer downshift lever assemblies have been eliminated.

Both transmissions consist essentially of a torque converter, planetary gear train, two multiple disc clutches, a one-way clutch and a hydraulic control system (Figs. 3, 4 and 5).

The only adjustments on the transmissions are the intermediate and low-reverse bands.

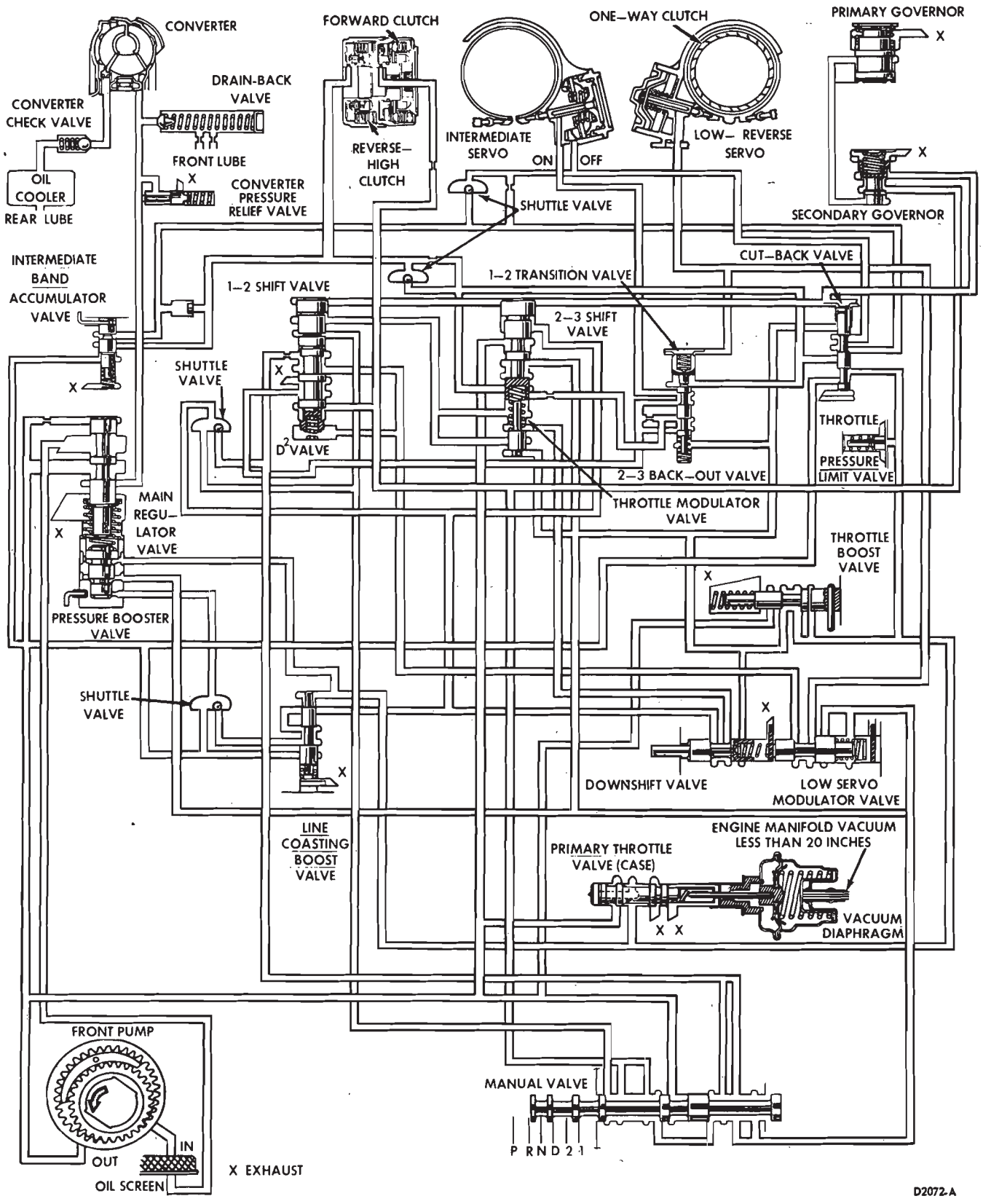


FIG. 3—Hydraulic Control System—C4 Automatic—All Except Falcon

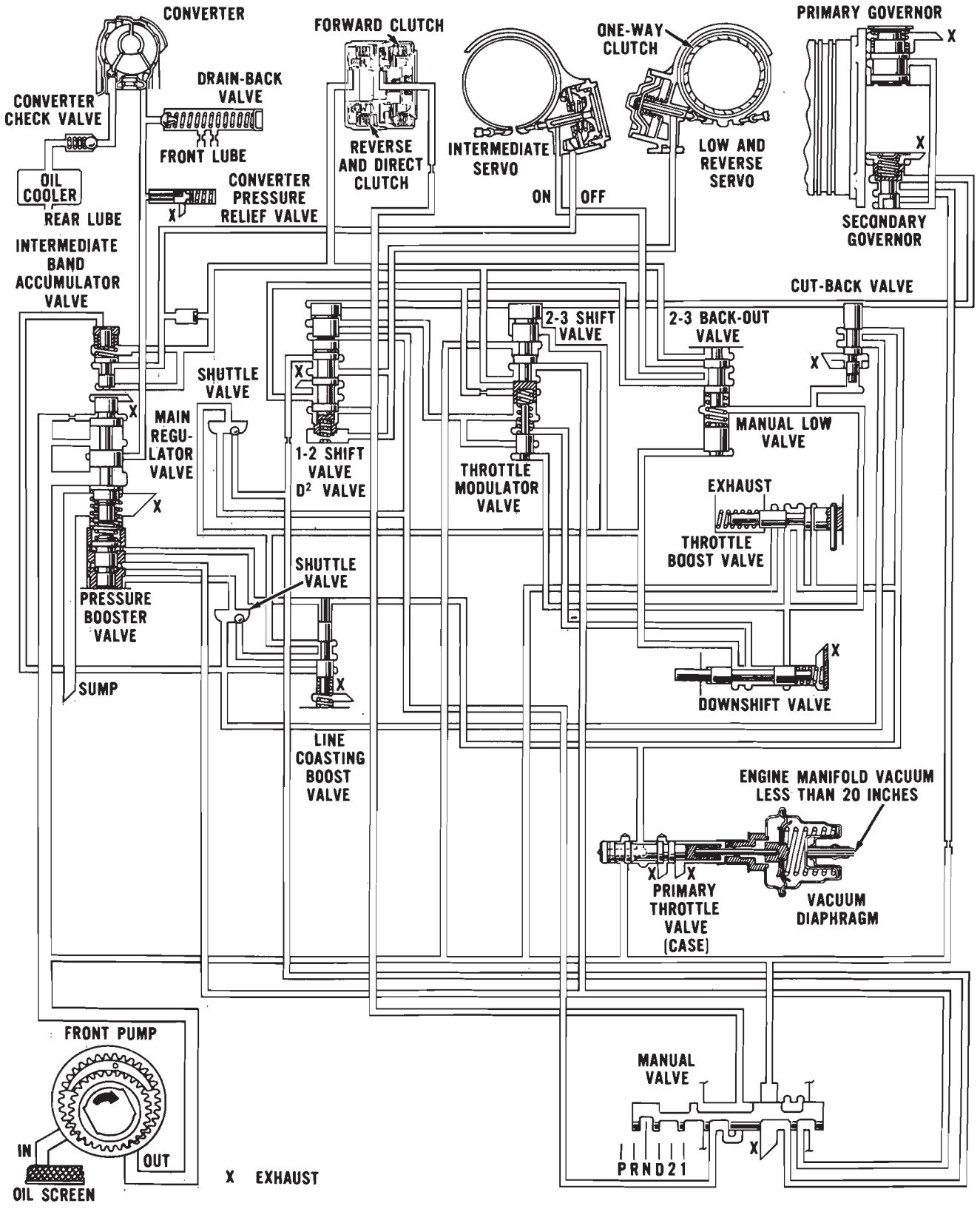


FIG. 4—Hydraulic Control System—C4 Automatic—Falcon Only

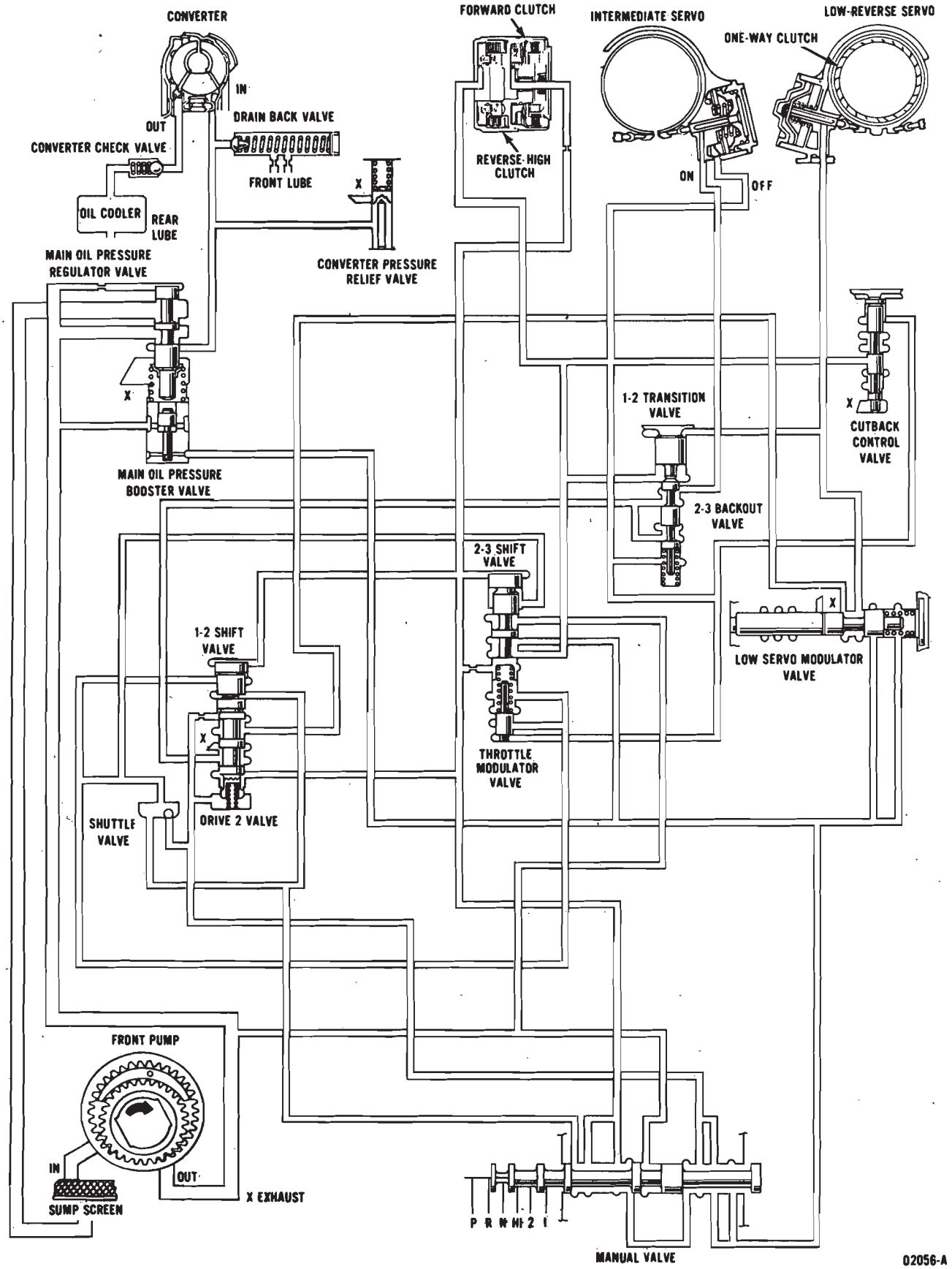


FIG. 5—Hydraulic Control System—C4S Semi-Automatic

2 IN-VEHICLE ADJUSTMENTS AND REPAIRS

CONTROL LINKAGE ADJUSTMENTS

The transmission control linkage adjustments should be performed in the order in which they appear in this section of the manual.

THROTTLE AND DOWN-SHIFT LINKAGE ADJUSTMENTS

Adjusting the throttle linkage is important to be certain the throttle and downshift systems (downshift system not used on C4S semi-automatic) are properly adjusted. On a C4 automatic transmission, the downshift system should come in when the accelerator is pressed through detent, and not before detent. Refer to Group 23 for detailed throttle and downshift linkage adjustment procedures.

MANUAL LINKAGE ADJUSTMENTS

Column Shift

1. Place the selector lever in the D position tight against the D stop.
On a Maverick equipped with a semi-automatic transmission, place the selector lever in HI.
2. Loosen the shift rod adjusting nut at point A (Fig. 6, 7 or 8).
3. Shift the manual lever at the transmission into the D or HI detent position, third from the rear.
4. Make sure that the selector lever has not moved from the D or HI stop; then, tighten the nut at point A to 10-20 ft-lbs.
5. Check the transmission operation for all selector lever detent positions.

Console or Floor Shift

1. Position the transmission selector lever in D position.
2. Raise the vehicle and loosen the manual lever shift rod retaining nut (Fig. 9, 10 or 11). Move the transmission manual lever to the D position, fourth detent position from the back of the transmission.
3. With the transmission selector lever and manual lever in the D positions, torque the attaching nut 10 to 20 ft-lbs.
4. Check the operation of the

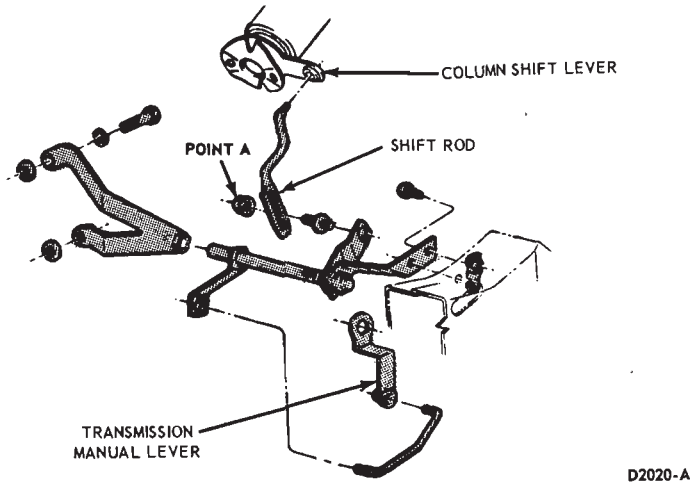


FIG. 6—Manual Linkage—Column Shift—Ford and Meteor

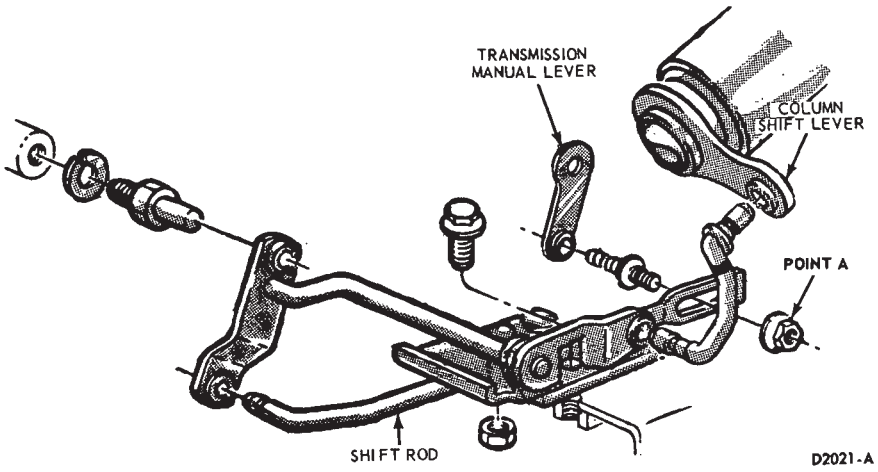


FIG. 7—Typical Manual Linkage—Column Shift—Fairlane, Falcon and Montego

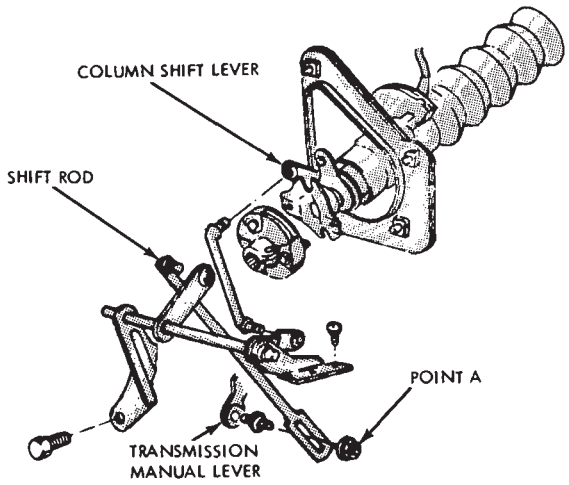


FIG. 8—Manual Linkage—Column Shift—Maverick

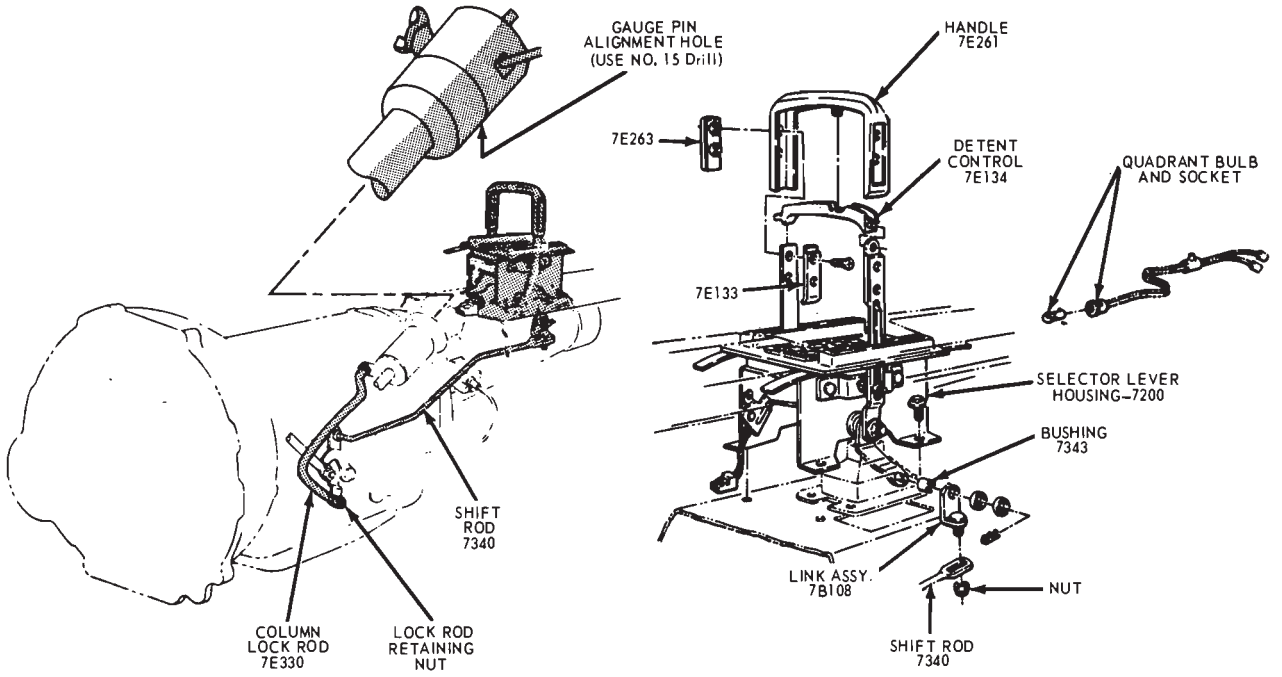


FIG. 9—Manual Linkage—Console or Floor Shift—Ford

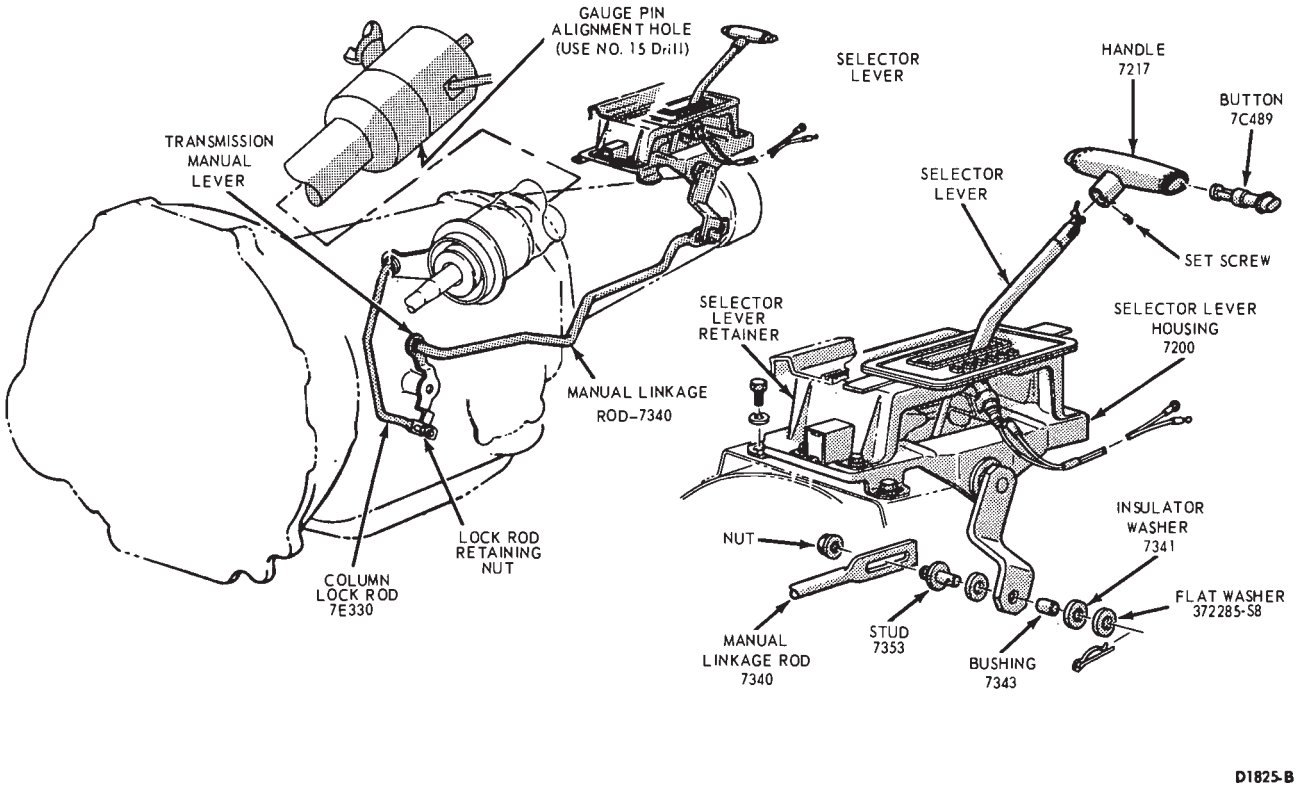


FIG. 10—Manual Linkage—Console or Floor Shift—Fairlane and Montego

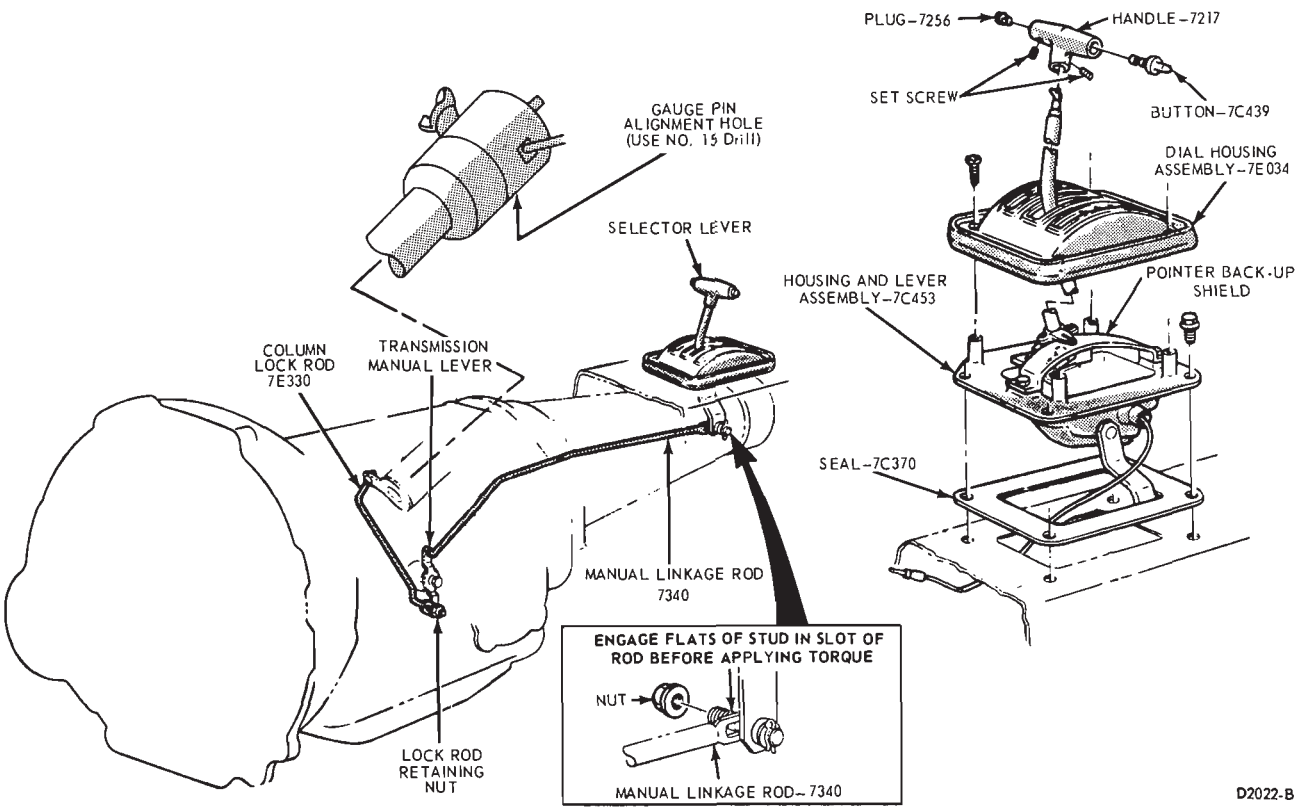


FIG. 11—Manual Linkage—Console or Floor Shift—Mustang

transmission in each selector lever position.

LOCK ROD ADJUSTMENT (CONSOLE OR FLOOR SHIFT VEHICLES ONLY)

Before attempting to adjust the lock rod, be sure that the transmission manual linkage is properly adjusted.

1. Raise the vehicle and loosen the lock rod retaining nut (Fig. 9, 10 or 11).
2. Lower the vehicle and place the selector lever in the D position tight against the D stop.
3. Align the hole in the steering column socket casting with the column alignment mark and insert a 0.180 diameter gauge pin (No. 15 drill). The column casting must not rotate with the gauge pin in position.
4. Raise the vehicle and torque the lock rod retaining nut to 10-20 ft-lbs.
5. Lower the vehicle. Remove the gauge pin and check the linkage for proper operation.

NEUTRAL START SWITCH ADJUSTMENT

COLUMN SHIFT

The neutral start switch has been eliminated on all column shift vehicles with the exception of Falcon and Maverick. To properly adjust the switch, follow the procedures outlined below:

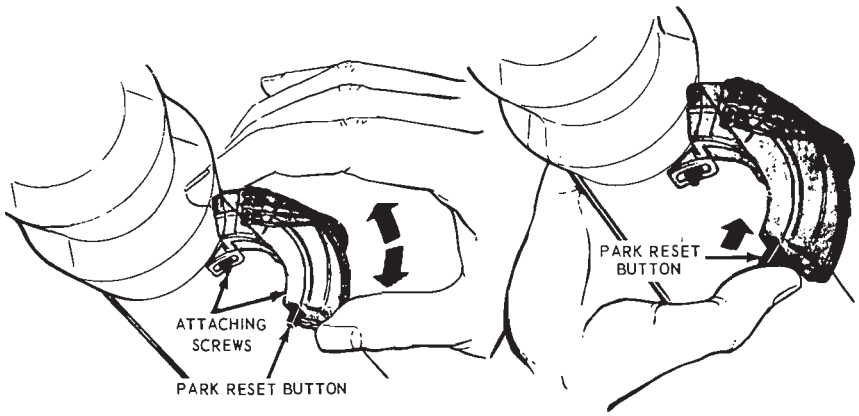


FIG. 12—Adjusting Neutral Start Switch—Column Shift

Neutral Position

1. With the selector lever held lightly against the neutral stop, attempt to start the engine. If the engine starts while holding the lever but does not start when the lever is released, the shift linkage should be adjusted. If the engine does not start in either condition, adjust the switch.
2. To adjust the switch in neutral, place the transmission selector lever against the stop of the neutral detent position.
3. Loosen the two retaining screws that locate the switch on the steering column (Fig. 12).
4. With the selector lever against the neutral stop, rotate the switch until a start in the neutral position is obtained. Then, tighten the switch attaching screws to 20 in-lbs torque.

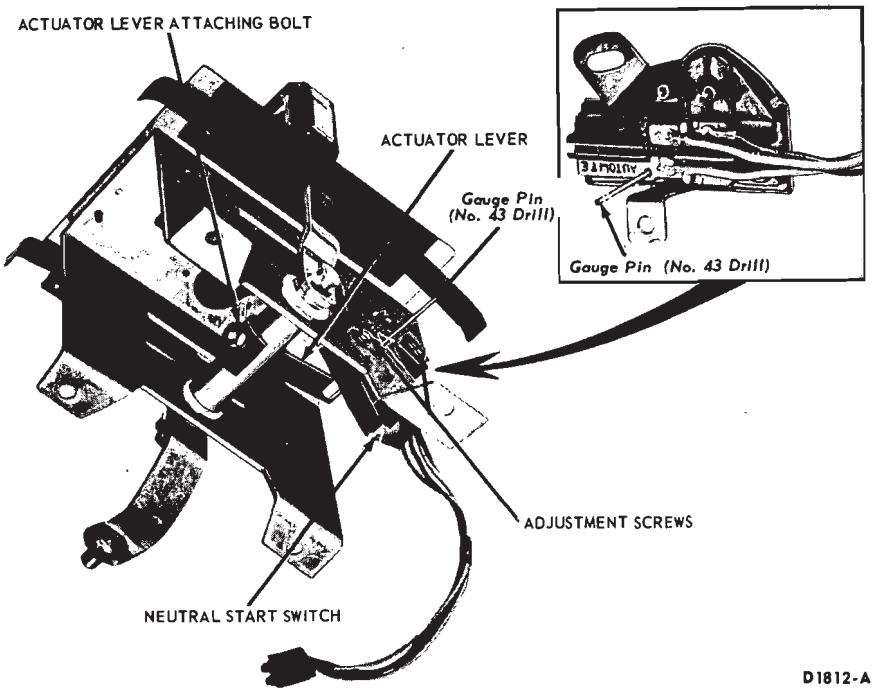


FIG. 13—Neutral Start Switch Adjustments—Console Shift—Ford

5. With the switch properly adjusted in neutral, place the selector lever in the 1 position and push the park reset button (Fig. 12) to the left (counterclockwise) until it stops. **The park reset must be performed whenever the switch has been adjusted.**

Park Position

1. Place the selector lever in the park position, release the lever and attempt to start. If the engine does not start, reset the park adjustment.
2. To adjust the switch for the park position, place the transmission selector lever in 1 and push the park reset button (Fig. 12) to the left (counterclockwise) until it stops.
3. Check the operation of the switch in each selector lever position. The starter should engage in only the neutral and park positions. **Be sure to perform the park reset if for any reason the neutral switch is adjusted.**

If, after performing the switch adjustments, the starter still will not engage in the neutral or park positions, replace the switch. Never replace the neutral switch until the switch adjustments have been made.

CONSOLE SHIFT

Ford

1. With the manual linkage properly adjusted, check the starter engagement circuit in all positions. The circuit must be open in all drive positions and closed only in park and neutral.
2. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.
3. Remove two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the panel.
4. Loosen the two combination starter neutral and back-up light switch attaching screws (Fig. 13).
5. Move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 13).
6. Place the transmission selector lever firmly against the stop of the neutral detent position.
7. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch lever contacts the selector lever actuator. If an adjustment can not be made by rotating the switch, loosen the actuator lever attaching bolt and adjust the lever (Fig. 13).
8. Tighten the neutral start switch attaching screws. If the actuator lever was adjusted, tighten the actuator lever bolt to 6-10 ft-lbs.
9. Turn the ignition key to the ACC position and, place the selector lever in the reverse position and check the operation of the back-up lights. Turn the key off.

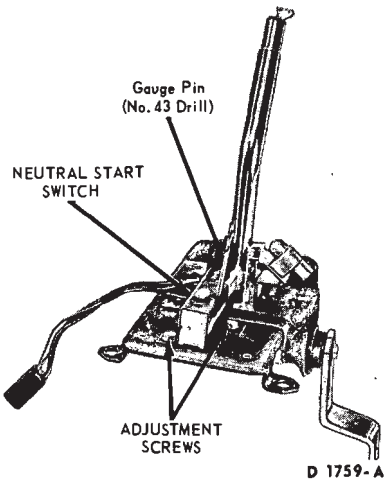


FIG. 14—Neutral Start Switch Adjustments—Console Shift—Fairlane-Montego

10. Place the console top panel on the console and install the retaining screws.
11. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE-MONTEGO

1. With the manual linkage properly adjusted, check the starter engagement circuit in all positions. The circuit must be open in all drive positions and closed only in park and neutral.
2. Remove the selector lever handle from the lever.
3. Remove the trim panel from the top of the console.
4. Remove the cover and dial indicator as an assembly.
5. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.
6. Loosen the two combination starter neutral and back-up light switch attaching screws (Fig. 14).
7. Move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 14).
8. Place the transmission selector lever firmly against the stop of the neutral detent position.
9. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch actuating lever contacts the selector lever.
10. Tighten the switch attaching screws and remove the gauge pin. Check for starting in the park position.

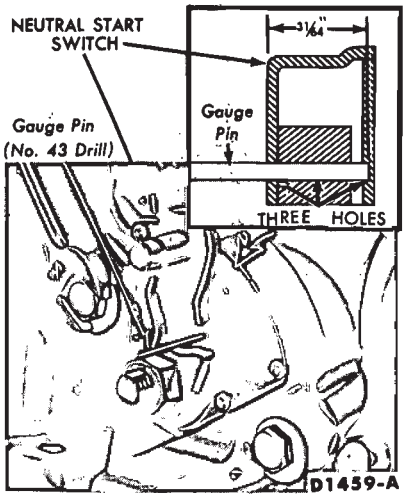


FIG. 15—Neutral Start Switch Adjustments—Console Shift—Mustang

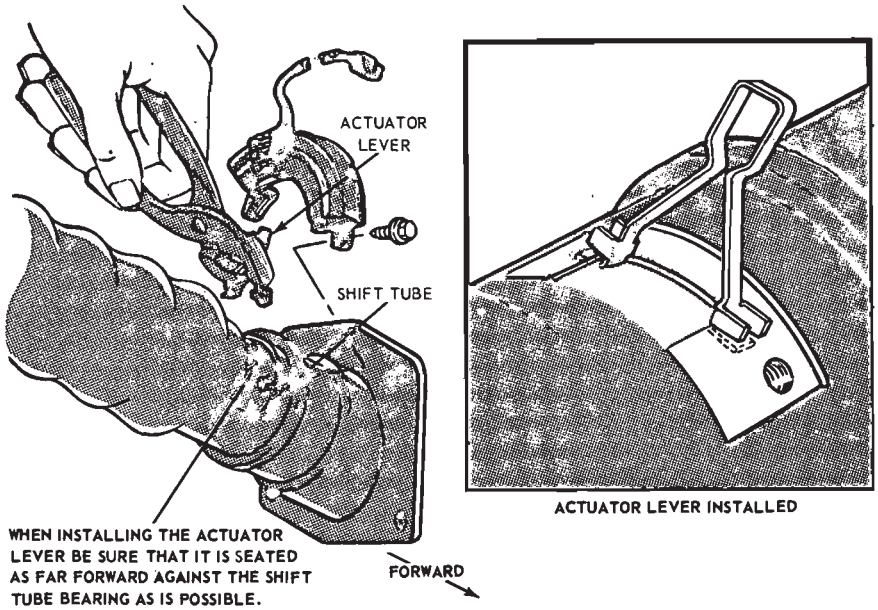


FIG. 16—Removing or Installing Neutral Start Switch Actuator Lever

11. Turn the ignition key to the ACC position and place the selector lever in the reverse position and check the operation of the back-up lights. Turn the key off.

12. Position the selector lever retainer to the selector lever housing. Install the four attaching screws.

13. Install the cover and dial indicator.

14. Install the trim panel on the top of the console. Install the selector lever handle.

MUSTANG

1. With the manual lever properly adjusted, loosen the two switch attaching bolts (Fig. 15).

2. With the transmission manual lever in neutral, rotate the switch and insert the gauge pin (No. 43 drill shank end) into the gauge pin holes of the switch. **The gauge pin has to be inserted to a full 31/64 inch into the three holes of the switch (Fig. 15).**

3. Torque the two switch attaching bolts to specification. Remove the gauge pin from the switch.

4. Check the operation of the switch. The engine should start only with the transmission selector lever in Neutral and Park.

NEUTRAL START SWITCH REMOVAL AND INSTALLATION

COLUMN SHIFT

The neutral start switch has been eliminated on all column shift vehicles with the exception of Falcon and Maverick. To properly remove and install the switch, follow the procedures outlined below:

1. Disconnect the neutral start switch wires at the plug connector.

2. Disconnect the vacuum hoses, if so equipped.

3. Remove the two screws securing the neutral start switch to the steering column and lift the switch from the column.

Check the column to be sure the metal switch actuator is secure to the shift tube and that it is seated as far forward against the shift tube bearing as is possible. Also check for a broken or damaged actuator. If it is broken or damaged, replace it as shown in Fig. 16.

4. Before installing a new switch to the column, check to see that the red neutral position gauge is inserted in the neutral pinning hole. If the pin is missing, align the two holes at the neutral pinning hole on top of the switch and install a No. 43 drill or 0.092-0.093 inch gauge pin.

5. While holding the selector lever against the stop in the neutral detent position, place the switch on the column and install the two attaching screws. Tighten the screws to 20 in-lbs torque.

6. Remove the gauge pin (or No. 43 drill if used).

7. Connect the switch wires to the plug connector and check for a start in the neutral position. The starter in the neutral position. The starter should engage with the selector lever against the neutral stop. If not, loosen the attaching screws and move the switch just enough to engage the starter. Tighten the screws to 20 in-lbs torque.

8. With the switch properly adjusted in neutral, push the park reset button (Fig. 12) to the left (counterclockwise) until it stops. **The park reset must be performed whenever the switch has been adjusted or replaced.**

9. To adjust the switch for the park position, place the transmission selector lever in 1 and push the park reset button (Fig. 12) to the left (counterclockwise) until it stops.

10. Connect the vacuum hoses to the switch, if so equipped.

11. Check the operation of the switch in each selector lever position. The starter should engage in only the neutral and park detent positions.

CONSOLE SHIFT

Ford

1. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.

2. Remove the two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the panel.

3. Remove the two screws securing the dial indicator assembly to the selector lever housing and remove the indicator assembly.

4. Disconnect the neutral start switch wires at the plug connector. Remove the wires from under the retaining clip.
5. Remove the two screws securing the neutral start switch to the selector lever housing and remove the switch (Fig. 13).
6. Position the neutral start switch to the selector lever housing and install the two attaching screws.
7. Adjust the neutral start switch as outlined under the Neutral Start Switch Adjustment procedures in this section.
8. Connect the neutral start switch wires to the plug connector. Position the wires in the retaining clip and close the clip.
9. Place the console top panel on the console and install the retaining screws.
10. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE-MONTEGO

1. Remove the selector lever handle from the lever.
2. Remove the trim panel from the top of the console.
3. Remove the cover and dial indicator as an assembly.
4. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.
5. Remove the two screws securing the neutral start switch to the selector lever housing. Disconnect the neutral start switch wires at the plug connector and remove the switch.
6. Position the neutral start switch to the selector lever housing and install the two attaching screws.
7. With the selector lever in neutral, move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 14).
8. Place the transmission selector lever firmly against the stop of the neutral detent position.
9. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch actuating lever contacts the selector lever.
10. Tighten the switch attaching screws and remove the gauge pin.
11. Connect the neutral start switch wires to the plug connector and check for starting in the park position.
12. Position the selector lever retainer to the selector lever housing. Install the attaching screws.
13. Install the cover and dial indicator.
14. Install the trim panel on the top of the console. Install the selector lever handle.

MUSTANG

1. Remove the downshift linkage rod from the transmission downshift lever.
2. Apply penetrating oil to the downshift lever shaft and nut. Remove the transmission downshift outer lever retaining nut and lever (Fig. 15).
3. Remove the two neutral start switch attaching bolts.
4. Disconnect the multiple wire connector. Remove the neutral switch from the transmission.
5. Install the neutral start switch on the transmission. Install the two attaching bolts.
6. With the transmission manual lever in neutral, rotate the switch and install gauge pin (No. 43 drill) into the gauge pin hole (Fig. 15).
7. Tighten the switch attaching bolts to specification and remove the gauge pin.
8. Install the outer downshift lever and attaching nut, and torque the nut to specification. Install the downshift linkage rod to the downshift lever.
9. Install the switch wires. Connect the wire multiple connector. Check the operation of the switch in each detent position. The engine should start only with the transmission selector lever in N (neutral) and P (park).

SELECTOR LEVER REMOVAL AND INSTALLATION—CONSOLE SHIFT

FORD

1. Raise the vehicle and disconnect the link assembly from the selector lever arm (Fig. 9).
2. Lower the vehicle. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.
3. Remove the two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the panel.
4. Disconnect the neutral start switch wires at the plug connector. Disconnect the bulb socket from the quadrant.
5. Remove the four bolts that attach the selector lever housing to the to the floor pan and remove the selector lever and housing.
6. Position the new selector lever and housing assembly on the floor pan and install the attaching bolts.
7. Connect the bulb socket to the quadrant and the neutral start switch wires to the plug connector.
8. Raise the vehicle and secure the link assembly to the selector lever arm with the bushing, insulator, flat washer and cotter pin (Fig. 9). Lower the vehicle.
9. Place the console top panel on the console and install the retaining screws.
10. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE-MONTEGO

1. Raise the vehicle on a hoist or jack stands.
2. Remove the retainer that secures the manual linkage rod to the lower end of the manual lever (Fig. 10).
3. Remove the flat washer and two insulator washers and disconnect the rod from the arm.
4. Working from inside of the vehicle, remove the selector lever handle attaching screw. Lift the handle off the selector lever.
5. Remove the console trim panel from the top of the console. Remove the console retaining screws and remove the console.
6. Remove the cover and dial indicator as an assembly.
7. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.
8. Disconnect the neutral start switch wires at the plug connector. Disconnect the bulb socket from the selector lever housing.
9. Remove the three bolts that secure the selector lever control housing to the console. Lift the selector lever housing from the console.
10. Remove the selector lever to housing attaching nut. Remove the lever from the housing.
11. Install the selector lever in the housing and install the attaching nut. Torque the nut to 20 to 25 ft-lbs.
12. Install the selector lever handle.
13. Position the selector lever as shown in Figure 17. With a feeler gauge, check the clearance between the detent pawl and plate. The clearance should be 0.005 to 0.010 inch. If necessary adjust the height of the detent pawl as shown in Figure 17.

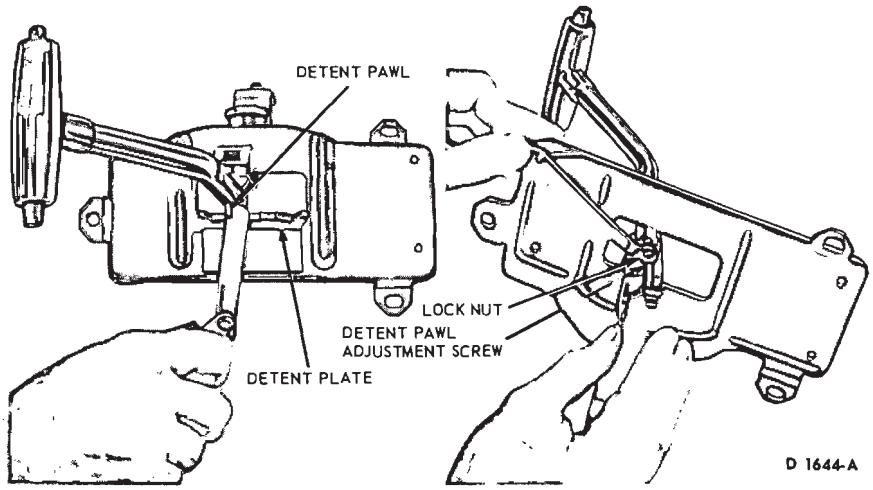


FIG. 17—Typical Selector Lever Detent Pawl Adjustment

14. Remove the handle from the selector lever.
15. Position the selector lever housing in the console and install the three attaching bolts. Do not tighten the attaching bolts at this time.
16. Connect the bulb socket to the selector lever housing and the neutral start switch wires to the plug connector.
17. Position the selector lever retainer to the selector lever housing. Install the four attaching screws.
18. Install the cover and dial indicator.
19. Place the console in position and install the retaining bolts. Tighten the selector lever housing attaching bolts.
20. Position the console trim panel and secure it with the attaching screws.
21. Install the handle and the button on the selector lever. Secure the handle with the set screw.
22. Secure the manual linkage rod to the arm with two insulating washers, a flat washer and a retainer (Fig. 10).
23. Adjust the linkage as required. Lower the vehicle.

MUSTANG

1. Raise the vehicle and remove the manual lever control rod attaching nut (Fig. 11).
2. Lower the vehicle, remove the selector lever handle attaching screw.
3. Remove the dial housing attaching screws and the housing.
4. Remove the two pointer back-up shield attaching screws and remove the shield.
5. Disconnect the dial indicator light.
6. Remove the selector housing and lever assembly attaching bolts. Remove the selector lever and housing.
7. Remove the selector lever to housing attaching nut. Remove the lever from the housing.
8. Install the selector lever in the housing and install the attaching nut. Torque the nut to 20 to 25 ft-lbs.
9. Install the selector lever handle.
10. Position the selector lever as shown in Figure 17. With a feeler gauge check the clearance between the detent pawl and plate. The clearance should be 0.005 to 0.010 inch. If necessary adjust the height of the detent pawl as shown in Figure 17.
11. Remove the handle from the selector lever.
12. Install the selector housing and lever assembly as shown in Figure 11. Torque the attaching bolts 4-6 ft-lbs.
13. Connect the dial indicator light.
14. Install the pointer back-up shield on the housing and lever assembly.
15. Install the dial housing and tighten the attaching screws.
16. Install the selector lever handle and tighten the attaching screw.
17. Position the selector lever in the D position.
18. Raise the vehicle. Install the transmission manual lever rod to the selector lever. Adjust the manual linkage.
19. Lower the vehicle and check the transmission operation in each selector lever detent position.

BAND ADJUSTMENT

INTERMEDIATE BAND

1. Clean all the dirt from the band adjusting screw area. Remove and discard the locknut.
2. Install a new locknut on the adjusting screw. With the tool shown in Fig. 18, tighten the adjusting screw until the tool handle clicks. The tool is a pre-set torque wrench which clicks and breaks when the torque on the adjusting screw reaches 10 ft-lbs.
3. **Back off the adjusting screw exactly 1 3/4 turns.**
4. Hold the adjusting screw from turning and torque the lock nut to specification.

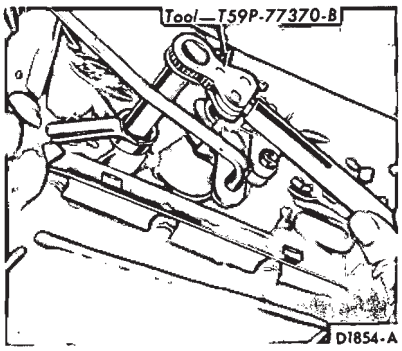


FIG. 18—Adjusting Intermediate Band

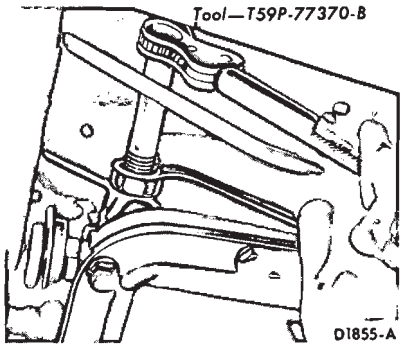


FIG. 19—Adjusting Low-Reverse Band

LOW-REVERSE BAND

1. Clean all the dirt from the band adjusting screw area. Remove and discard the locknut.
2. Install a new locknut on the adjusting screw with the tools shown in Fig. 19, tighten the adjusting screw until the tool handle clicks. The tool is a pre-set torque wrench which clicks and breaks when the torque on the adjusting screw reaches 10 ft-lbs.
3. **Back off the adjusting screw exactly 3 full turns.**
4. Hold the adjusting screw from turning and torque the lock nut to specification.

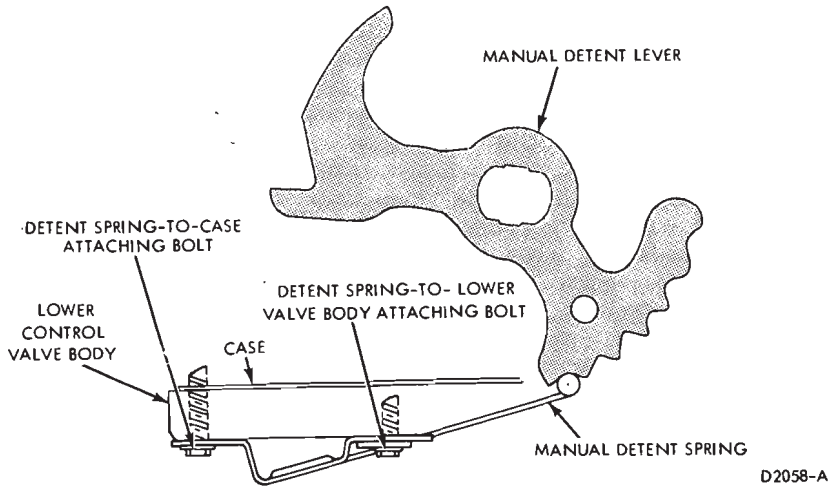


FIG. 20—Control Valve Body Detent Spring Installed

OIL PAN AND CONTROL VALVE BODY REMOVAL AND INSTALLATION

ALL EXCEPT FALCON

1. Raise the vehicle so the transmission oil pan is accessible.
2. Drain the transmission fluid. On PEA and PEF models, disconnect the fluid filler tube from the transmission oil pan to drain the fluid. On PEB, PEE and PEG models, loosen the pan attaching bolts to drain the fluid from the transmission.

If the same fluid is to be used again, filter the fluid through a 100 mesh screen. Reuse the fluid only if it is in good condition.

3. Remove the transmission fluid pan attaching bolts, pan and gasket.
4. Shift the transmission manual lever to the P position and remove the two bolts that attach the detent spring to the valve body and case (Fig. 20).
5. Remove the remaining valve body-to-case attaching bolts. Hold the manual valve to keep it from sliding out of the valve body and remove the valve body from the case. Failure to hold the manual valve while removing the control assembly, could cause the manual valve to become bent or damaged.
6. Refer to the Major Repair Operation for control valve body repair operation.
7. Thoroughly clean and remove all gasket material from the pan and pan mounting face of the case. Remove and discard the nylon shipping plug from the oil pan filler tube hole. This plug is used to retain transmission fluid within the transmission during shipment and should be discarded when the oil pan is removed.
8. Shift the manual lever at the transmission into the P detent position. Install the valve body to the case. Position the inner downshift lever between the downshift lever stop and the downshift valve. Make sure the two lands on the end of the manual valve engage the actuating pin on the manual detent lever. Install seven valve body-to-case bolts. Do not tighten the bolts at this time.
9. Position the detent spring to the lower valve body and install the spring-to-case bolt finger tight (Fig. 20).
10. Hold the detent spring roller in the center of the manual detent lever and install the detent spring-to-lower valve body bolt.(Fig. 20). Tighten the bolt to 80-120 in-lbs. torque.
11. Tighten all the control valve body-to-case attaching bolts to 80-120 in-lbs. Torque.
12. Place a new gasket on the pan. Install the pan and attaching bolts. Torque the bolts to specification.
13. On PEA and PEF models, connect the filler tube to the pan and tighten the filling securely.
14. Lower the vehicle and fill the transmission with fluid. Check the transmission pan area for fluid leakage.

FALCON

1. Raise the vehicle so the transmission oil pan is accessible.
2. Drain the transmission fluid by loosening the pan attaching bolts and allowing the fluid to drain.

If the same fluid is to be used again, filter the fluid through a 100 mesh screen. Re-use the fluid only if it is in good condition.

3. Remove the transmission fluid pan attaching bolts, pan and gasket. Discard the gasket.
4. Remove the valve body-to-case attaching bolts (Fig. 30). Remove the valve body from the case and the transmission inner control levers.
5. Refer to the Major Repair Operation for control valve body repair operation.
6. Thoroughly clean and remove all the gasket material from the pan and the pan mounting face of the case. Remove and discard the nylon shipping plug from the oil pan filler tube hole. This plug is used to retain transmission fluid within the transmission during shipment and should be discarded when the oil pan is removed. Install the valve body to the case, engaging the transmission inner control levers with the valve body manual and downshift valves.
7. Install the eight valve body to case attaching bolts. Torque the bolts to specification. **Operate the external manual and downshift levers to check for proper travel of the valve body manual and downshift valves.**
8. Place a new gasket on the pan. Install the pan and attaching bolts. Torque the bolts to specification.
9. Lower the vehicle and fill the transmission with fluid. Check the transmission pan area for fluid leakage.

INTERMEDIATE SERVO REMOVAL AND INSTALLATION

1. Raise the vehicle and remove the four servo cover-to-case attaching bolts. Remove the identification tag.

To gain access to the servo on a Maverick, it will be necessary to remove the crossmember.

2. Remove the servo cover, gasket, piston, and piston return spring. Remove the piston from the cover (Fig. 50).
3. Remove the piston seals and cover gasket.
4. Install new piston seals on the piston. Lubricate the piston seals with clean transmission fluid. Install the servo piston in the cover.
5. Install the piston return spring in the case. Place a new gasket on the cover. Install the piston and cover into the transmission case. Use two 5/16—18 x 1 1/4 bolts, 180 degrees apart to position the cover against the case.
6. Install the transmission identification tag. Install the two servo cover attaching bolts. Remove the two 1 1/4 inch bolts and install two attaching bolts. Torque the bolts to specification.

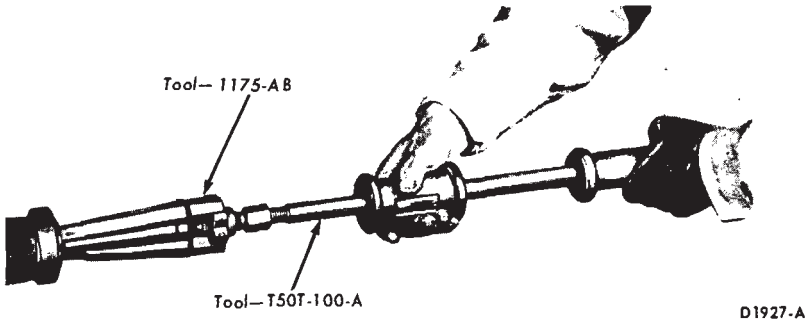


FIG. 21—Removing Extension Housing Seal

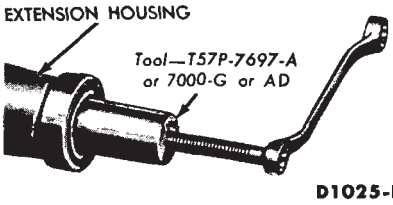


FIG. 22—Removing Extension Housing Bushing

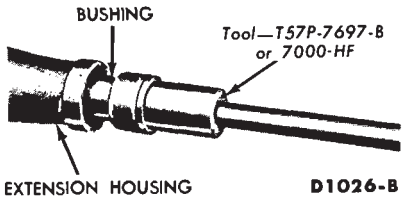


FIG. 23—Installing Extension Housing Bushing

7. On a Maverick, position the crossmember and install the attaching bolts. Torque the bolts to specification.

8. Adjust the intermediate band. Lower the vehicle and check the transmission fluid level.

9. If the band can not be adjusted properly, the struts are not in position. Remove the pan and valve body. Install the struts, valve body, pan, and adjust the band. Refill the transmission with fluid.

LOW-REVERSE SERVO PISTON REMOVAL AND INSTALLATION

1. Raise the vehicle on a hoist.

2. Loosen the reverse band adjusting screw lock nut. Tighten the reverse band adjusting screw to 10 ft-lbs torque. (Tightening the screw will insure that the band strut will be held against the case by the band, preventing it from falling down when the reverse servo piston assembly is removed).

3. Remove the four servo cover to case attaching bolts. Remove the servo cover and seal from the case.

4. Remove the servo piston from the case. **The piston seal cannot be replaced, without replacing the piston. The seal is bonded to the piston.**

5. To remove the piston from the stem, insert a small screw driver in the hole of the piston (Fig. 49). Remove the piston attaching nut.

6. Position the spacer (Fig. 48) on the piston stem. Install a new piston on the piston retaining shaft. Install the attaching nut. Torque the nut to specification.

7. Install the piston into the case. Install a new seal on the cover. Install the cover by using two 5/16—18 bolts, 1 1/4 inch long, at 180 degrees apart to position the servo cover on the case. Install two cover attaching bolts. Remove the two installing bolts and install the last two attaching bolts. Torque the cover-to-case attaching bolts to specification.

8. Adjust the low-reverse band. Lower the vehicle and check the transmission fluid level.

9. If the band can not be adjusted properly, the struts are not in position. Remove the fluid pan and valve body. Install the struts, valve body, pan and adjust the band. Refill the transmission with fluid.

EXTENSION HOUSING BUSHING AND REAR SEAL REMOVAL AND INSTALLATION

1. Disconnect the drive shaft from the transmission.

2. When only the rear seal needs replacing, carefully remove it with a tapered chisel or the tools shown in Fig. 21. Remove the bushing as shown in Fig. 22. **Use the bushing remover carefully so that the spline seal is not damaged.**

3. When installing a new bushing use the special tool shown in Fig. 23.

4. Before installing a new seal, inspect the sealing surface of the universal joint yoke for scores. If scores are found, replace the yoke.

5. Inspect the counterbore of the housing for burrs and remove with crocus cloth.

6. Install the seal into the housing with the tool shown in Fig. 24. The seal should be firmly seated in the bore. Coat the inside diameter of the fiber portion of the seal with C1AZ-19590-B lubricant.

7. Coat the front universal joint spline with C1AZ-19590-B lubricant and install the drive shaft.

EXTENSION HOUSING REMOVAL AND INSTALLATION

1. Raise the vehicle on the hoist.

2. Remove the drive shaft. Position the transmission jack to support the transmission.

3. Remove the speedometer cable from the extension housing.

4. Remove the extension housing to crossmember mount attaching bolts. Raise the transmission and remove the mounting pad between the extension housing and the crossmember.

5. Loosen the extension housing attaching bolts to drain the transmission fluid.

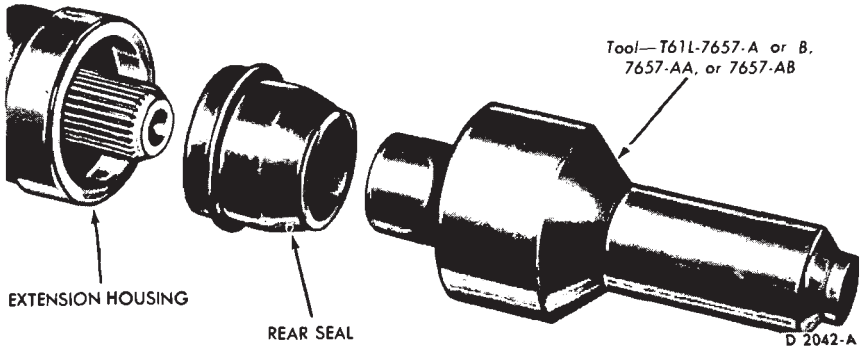


FIG. 24—Installing Extension Housing Seal

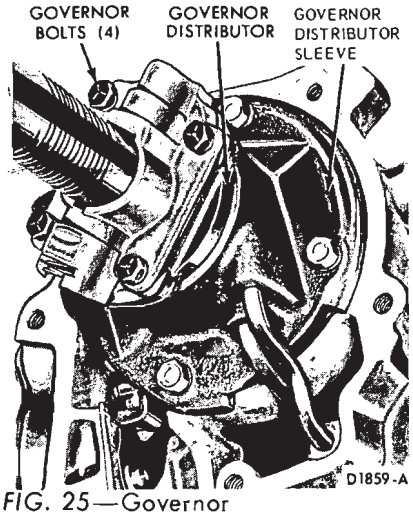


FIG. 25—Governor Installed—Automatic Transmission

6. Remove the six extension housing-to-case attaching bolts and remove the extension housing.
7. Install a new extension housing gasket on the case. Install the extension housing and six attaching bolts. Torque the bolts to specification.
8. Install the transmission mounting pad on the crossmember. Lower the transmission and install the extension housing to crossmember attaching bolts. Torque the bolts to specification. Remove the transmission jack.
9. Install the speedometer cable in the extension housing. Install the drive shaft.
10. Lower the vehicle and fill the transmission with fluid.
11. Check the extension housing area for fluid leakage.

GOVERNOR REMOVAL AND INSTALLATION (C4 AUTOMATIC)

1. Raise the vehicle on the hoist.
2. Remove the drive shaft. Position the transmission jack to support the transmission.
3. Remove the speedometer cable from the extension housing.
4. Remove the extension housing to crossmember mount attaching bolts. Raise the transmission and remove the mounting pad between the extension housing and the crossmember.
5. Loosen the extension housing attaching bolts to drain the transmission fluid.
6. Remove the six extension housing-to-case attaching bolts and remove the extension housing.
7. Remove the governor housing to governor distributor attaching bolts (Fig. 25). Remove the governor housing from the distributor.
8. Refer to Major Repair Operations for governor repair operations.
9. Install the governor housing on the governor distributor (Fig. 25). Install the attaching bolts and torque the bolts to specification.
10. Install a new extension housing gasket on the case. Install the extension housing and six attaching bolts. Torque the bolts to specification.
11. Install the transmission mounting pad on the crossmember. Lower the transmission and install the extension housing to crossmember attaching bolts. Torque the bolts to specification. Remove the transmission jack.
12. Install the speedometer cable in the extension housing. Install the drive shaft.
13. Lower the vehicle and fill the transmission with fluid.
14. Check the extension housing area for fluid leakage.

3 REMOVAL AND INSTALLATION

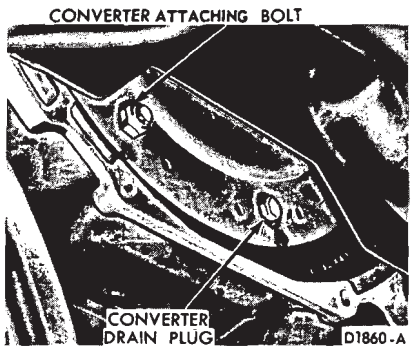


FIG. 26—Converter Drain Plug Location

An oil impregnated plastic grommet is incorporated in the end of the manual shift linkage lever arm on all column shift vehicles. A special tool T67P-7341-A is required to install the grommet in the manual lever, and to install the manual linkage rod into the grommet. Refer to Part 17-01, Section 2, for the grommet replacement procedures.

TRANSMISSION REMOVAL

1. Raise the vehicle and remove the converter cover attaching bolts, at the lower front side of the converter housing. Remove the cover.
2. Remove the converter drain plug (Fig. 26). Drain the converter and reinstall the plug.
3. Remove the drive shaft and install the extension housing seal replacer tool in the extension housing.
4. Remove the vacuum line hose from the transmission vacuum unit if so equipped. Disconnect the vacuum line from the retaining clip.
5. Remove the two engine support to crossmember bolts or nuts.
6. Remove the speedometer cable from the extension housing.
7. Remove the fluid filler tube from the pan and drain the transmission fluid on PEA and PEF models. On PEB, PEE and PEG models, loosen the transmission pan bolts and drain the fluid at one corner of the pan. Tighten the attaching bolts after the fluid has drained.
8. Disconnect the fluid cooler lines from the transmission case.
9. Disconnect the selector rod at the transmission manual lever. Disconnect the downshift rod (if so equipped) at the transmission downshift lever.

On console and floor shift vehicles, disconnect the column lock rod at the transmission.

10. On a Mustang, disconnect the neutral start switch wires from the retaining clamps and connectors.
11. Disconnect the starter cable. Remove the starter attaching bolts and remove the starter from the converter housing.
12. On PEB, PEE and PEG models, lift the fluid filler tube from the case.
13. Remove the four converter-to-flywheel attaching nuts.
14. Position the transmission jack to support the transmission and secure the transmission to the jack with a safety chain.
15. Remove the crossmember attaching bolts and lower the crossmember.
16. Remove the five converter

housing-to-engine attaching bolts. Lower the transmission and remove it from under the vehicle.

TRANSMISSION INSTALLATION

1. With the converter properly installed, place the transmission on the jack. Secure the transmission to the jack with the safety chain.
2. Raise the transmission into position and install the five converter housing-to-engine attaching bolts. Torque the bolts to specification. Remove the safety chain from the transmission.
3. Position the crossmember and install the attaching bolts. Torque the bolts to specifications.
4. Lower the transmission and install the engine support to crossmember bolts or nuts. Torque the bolts or nuts to specification.
5. Install the four flywheel to converter attaching nuts. Torque the nuts to specification.
6. Remove the transmission jack. Install the fluid filler tube in the transmission case or pan. Install the vacuum hose on the transmission vacuum unit if so equipped. Install the vacuum line retaining clip.
7. Connect the fluid cooling lines to the transmission case.
8. On a Mustang, connect the neutral start switch wires to their respective connectors and secure the harness in the retaining clamps.
9. Connect the downshift rod (if so equipped) to the downshift lever.
10. Connect the selector rod to the transmission manual lever. Connect the column lock rod on console and floor shift vehicles.
11. Connect the speedometer cable to the extension housing.
12. Install the converter housing cover and torque the attaching bolts to specification.
13. Install the starter and torque the attaching bolts to specification. Connect the starter cable.
14. Install the drive shaft. Torque the companion flange U-bolts attaching nuts to specification.
15. Lower the vehicle. Fill the transmission to the proper level with the specified fluid. Adjust the manual and downshift linkage.

4 MAJOR REPAIR OPERATIONS

Before removing any of the subassemblies, thoroughly clean the outside of the transmission to prevent dirt from entering the mechanical parts. During the repair operations, refer to Part 17-01 for common adjustments and repairs or cleaning and inspection procedures.

During the transmission disassembly or assembly operations, ten thrust washers located between the subassemblies must be removed and installed. It is important that each thrust washer be in the correct position during the assembly operation. To properly locate and identify the thrust washers, the various positions of the thrust washers are shown in the illustrations and are numbered 1 through 10. No. 1 is at the first thrust washer located at the front pump. The last thrust washer, No. 10, is located at the parking pawl ring gear.

DISASSEMBLY OF TRANSMISSION

1. Remove the converter from the transmission front pump and converter housing.
2. On a C4 automatic transmission, remove the transmission vacuum unit with the tool shown in Fig. 27.

Remove the vacuum unit gasket and the control rod.

3. On a C4 automatic transmission, remove the primary throttle valve (Fig. 28) from the opening at the rear of the case.

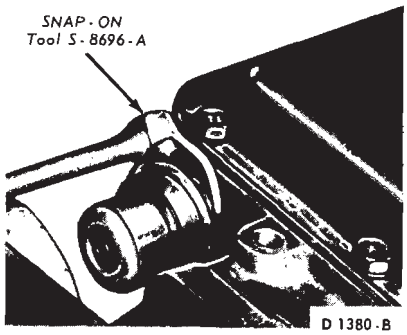


FIG. 27—Removing Vacuum Unit—C4 Automatic

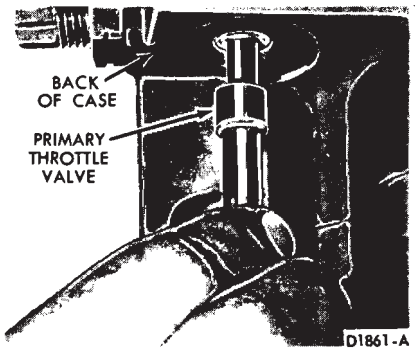


FIG. 28—Removing or Installing Primary Throttle Valve—C4 Automatic

4. Remove the two extension housing-to-case bolts shown in Fig. 29 and mount the transmission in the holding fixture.
5. Remove the transmission pan attaching bolts, pan and gasket.
6. Remove the control valve body attaching bolts (Fig. 30). Remove the control valve body from the case.
7. Loosen the intermediate band adjusting screw (Fig. 31) and remove the intermediate band struts from the case. Loosen the low-reverse band adjusting screw and remove the low-reverse band struts.

TRANSMISSION END PLAY CHECK

1. To keep the output shaft in alignment during the end play check, install the extension housing oil seal

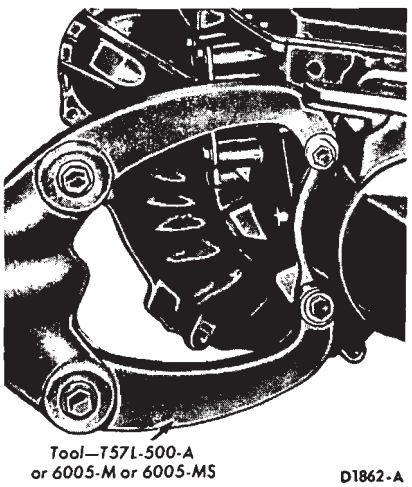


FIG. 29—Transmission Mounted in Holding Fixture

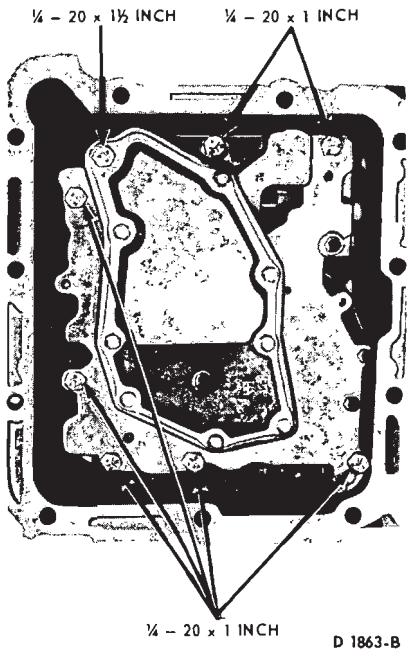


FIG. 30—Control Valve Body Attaching Bolts

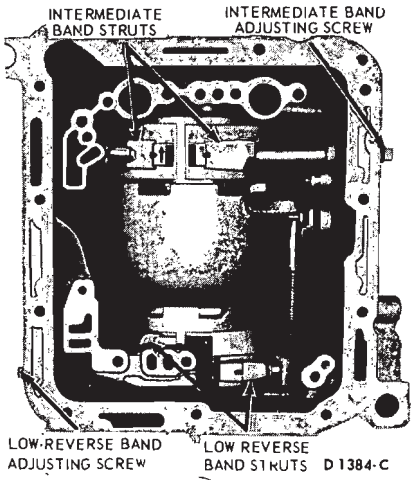


FIG. 31—Band Adjusting Screws and Struts—Typical

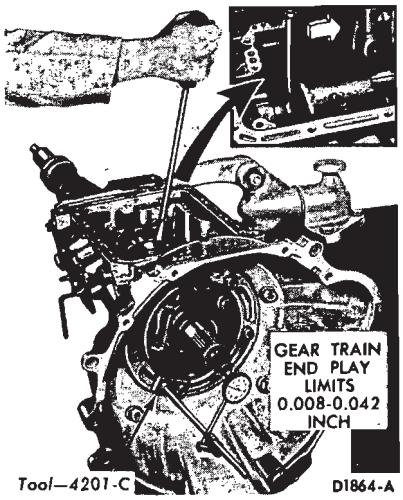


FIG. 32—Checking End Play

SELECTIVE THRUST WASHERS
(FOR END-PLAY CORRECTION)

THRUST WASHER NO. 1		THRUST WASHER NO. 2	
0.053-0.0575	Red	No. Stamped Washer	Metal Thrust Washer
0.070-0.074	Green		
0.087-0.091	Natural	1	0.043-0.041
0.104-0.108	Black	2	0.058-0.056
0.121-0.125	Yellow	3	0.075-0.073
		SPACER (This is a selective spacer used with washer 2 or 3. When used, install next to stator support.)	0.036-0.032

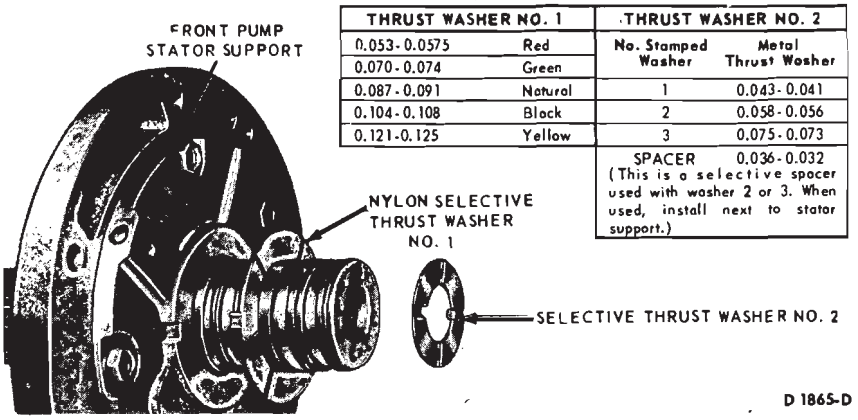


FIG. 33—Selective Thrust Washer Locations

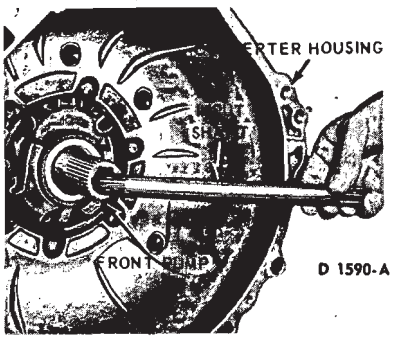


FIG. 34—Removing or Installing Input Shaft

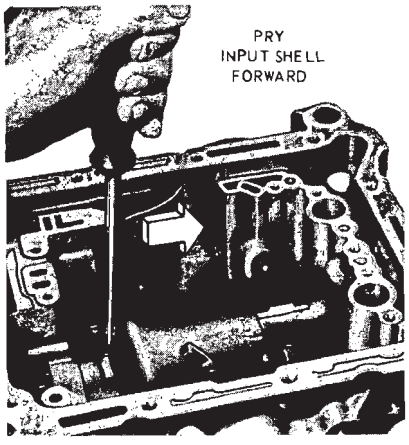


FIG. 35—Removing Front Pump

replacer tool or a front universal joint yoke in the extension housing.

2. Remove one of the converter housing-to-case attaching bolts and mount the dial indicator as shown in Fig. 32.

3. **The input shaft is a loose part and has to be properly engaged with the spline of the forward clutch hub during the end play checking procedure.** Move the input shaft and gear train toward the rear of the transmission case.

4. With the dial indicator contacting the end of the input shaft, set the indicator at zero (Fig. 32).

5. Insert a screwdriver behind the input shell (Fig. 32). Move the input shell and the front part of the gear train forward.

6. Record the dial indicator reading. The end play should be 0.008 to 0.042 inch. If the end play is not within specification, the selective thrust washers (Fig. 33) must be replaced as required. The selective thrust washers can be replaced individually to obtain the specified end play.

7. Remove the dial indicator and remove the input shaft from the front pump stator support (Fig. 34).

REMOVAL OF CASE AND EXTENSION HOUSING PARTS

1. Rotate the holding fixture to put the transmission in a vertical position with the converter housing up.

2. Remove the five converter housing-to-case attaching bolts (Fig. 34). Remove the converter housing from the transmission case.

3. Remove the seven front pump attaching bolts. Remove the front pump by inserting a screwdriver behind the input shell (Fig. 35). Move the input shell forward until the front

FIG. 36—Position of Intermediate Band for Removal or Installation

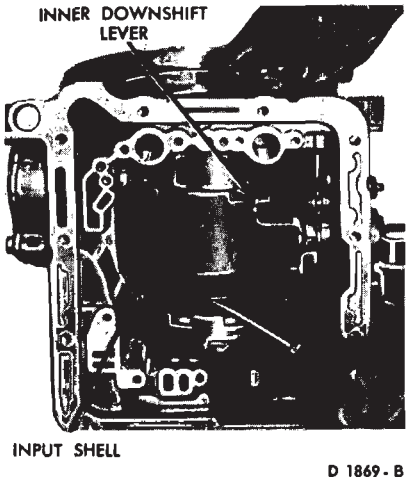


FIG. 37—Lifting Input Shell and Gear Train

pump seal is above the edge of the case.

Remove the front pump and gasket from the case. If the selective thrust washer No. 1 did not come out with the front pump, remove it from the top of the reverse-high clutch.

4. Remove the intermediate and low-reverse band adjusting screws from the case. Rotate the intermediate band to align the band ends with the clearance hole in the case (Fig. 36). Remove the intermediate band

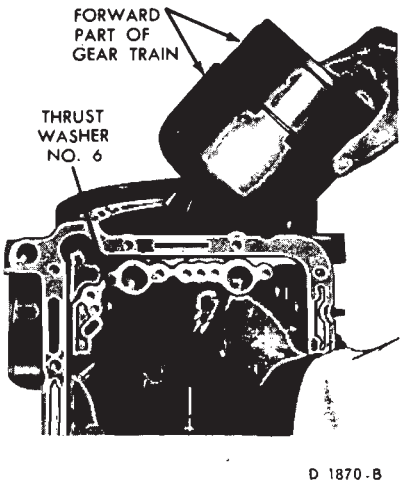


FIG. 38—Removing or Installing Forward Part of Gear Train

FIG. 39—Forward Part of Gear Train Positioned in Holding Fixture

from the case.

5. Using a screwdriver between the input shell and rear planet carrier (Fig. 37), lift the input shell upward and remove the forward part of the gear train as an assembly (Fig. 38).

6. Place the forward part of the gear train in the holding fixture shown in Fig. 39.

7. With the gear train in the hold ing fixture, remove the reverse-high clutch and drum from the forward clutch (Fig. 40).

8. If thrust washer No. 2 (Fig. 33) did not come out with the front pump, remove the thrust washer from the forward clutch cylinder. If a selective spacer was used, remove the spacer. Remove the forward clutch from the forward clutch hub and ring gear (Fig. 40).

9. If thrust washer No. 3 (Fig. 40) did not come out with the forward clutch, remove the thrust washer from the forward clutch hub.

10. Remove the forward clutch hub and ring gear from the front planet carrier (Fig. 40).

11. Remove thrust washer No. 4 and the front planet carrier from the input shell.

12. Remove the input shell, sun gear and thrust washer No. 5 from the holding fixture.

13. From inside the transmission case (Fig. 38) remove thrust washer No. 6 from the top of the reverse planet carrier.

14. Remove the reverse planet carrier and thrust washer No. 7 from the reverse ring gear and hub (Fig. 41).

15. Move the output shaft forward and with the tool shown in Fig. 42 remove the reverse ring gear hub-to-output shaft retaining ring.

16. Remove the reverse ring gear and hub from the output shaft. Re-

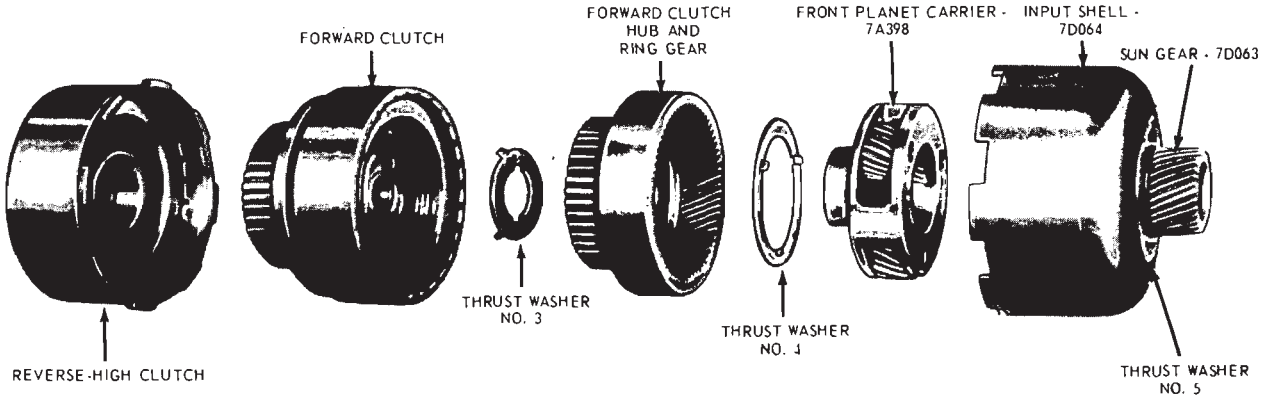


FIG. 40—Forward Part of Gear Train Disassembled

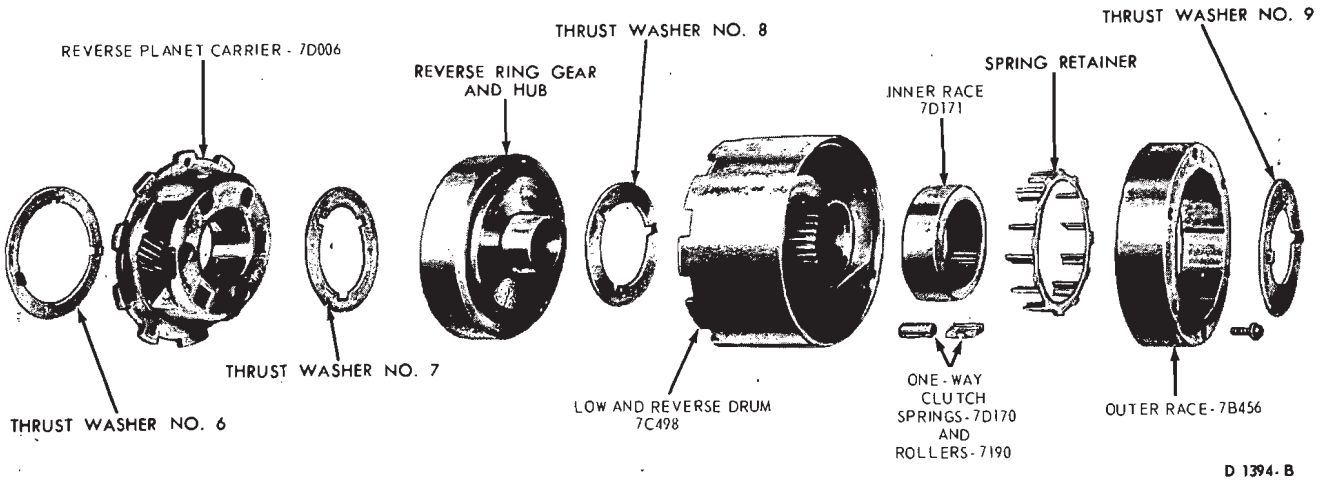


FIG. 41—Lower Part of Gear Train Disassembled

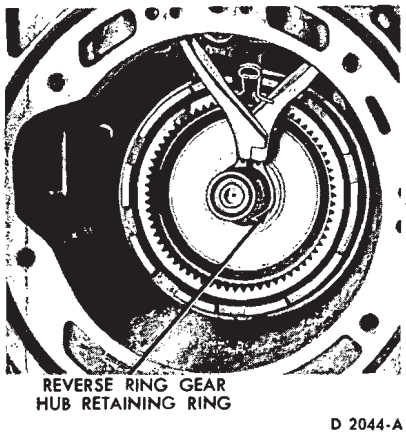


FIG. 42—Removing or Installing Reverse Ring Gear Hub Retaining Ring

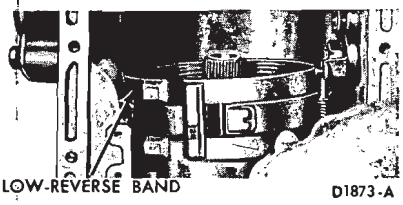


FIG. 43—Removing or Installing Low-Reverse Band

move thrust washer No. 8 from the low and reverse drum.

17. Remove the low-reverse band from the case (Fig. 43).

18. Remove the low-reverse drum from the one-way clutch inner race (Fig. 41).

19. Remove the one-way clutch inner race by rotating the race clockwise as it is removed.

20. Remove the 12 one-way clutch rollers, springs and the spring retainer from the outer race (Fig. 41). **Do not lose or damage any of the 12 springs or rollers. The outer race of the one-way clutch cannot be removed from the case until the extension housing, output shaft and governor distributor sleeve are removed.**

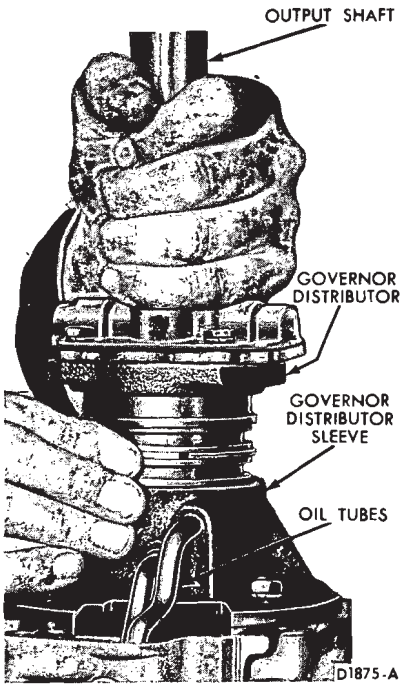


FIG. 44—Removing or Installing Output Shaft and Governor Distributor—C4 Automatic

21. Remove the transmission from the holding fixture. Position the transmission on the bench in a vertical position with the extension housing up. Remove the four extension housing-to-case attaching bolts. Remove the extension housing and gasket from the case.

22. Pull outward on the output shaft and remove the output shaft and governor distributor assembly (if so equipped) from the governor distributor sleeve (Fig. 44).

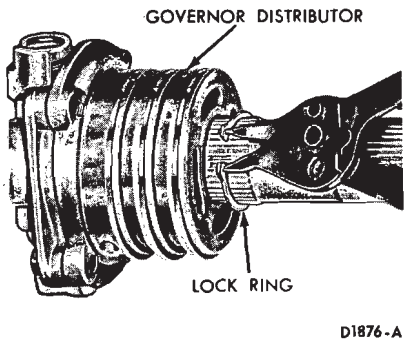


FIG. 45—Removing or Installing Governor Distributor Snap Ring—C4 Automatic

23. On a C4 automatic transmission, remove the governor distributor lock ring from the output shaft (Fig. 45). Remove the governor distributor from the output shaft.

24. Remove the four distributor sleeve-to-case attaching bolts. Remove the distributor sleeve from the case. **Do not bend or distort the fluid tubes as the tubes are removed from the case with the distributor sleeve.**

25. Remove the parking pawl return spring, pawl, and pawl retaining pin from the case (Fig. 46).

26. Remove the parking gear and thrust washer No. 10 from the case.

27. Remove the six one-way clutch outer race-to-case attaching bolts with the tool shown in Fig. 47. As the bolts are removed, hold the outer race located inside the case in position. Remove the outer race and thrust washer No. 9 from the case (Fig. 41).

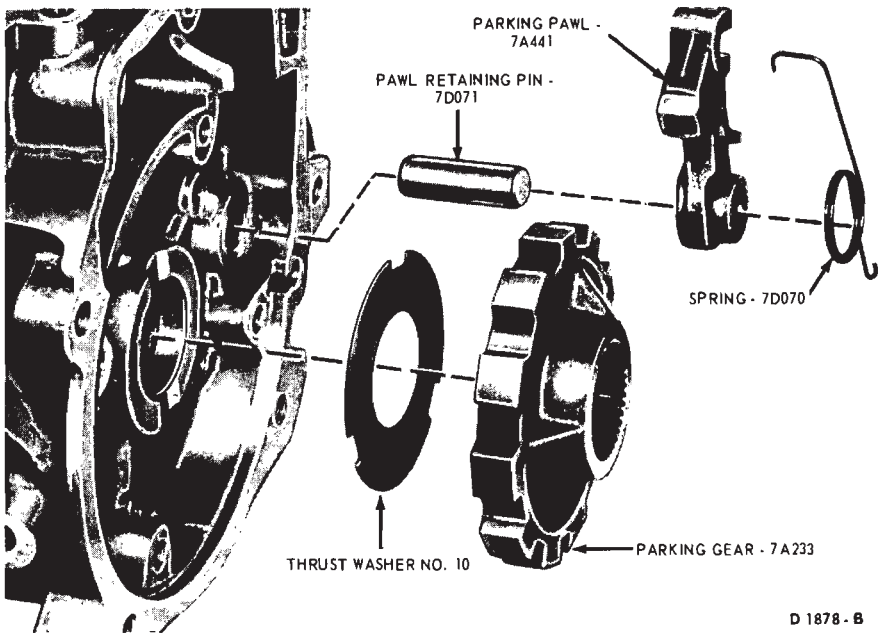


FIG. 46—Parking Pawl, Return Spring Retaining Pin and Gear

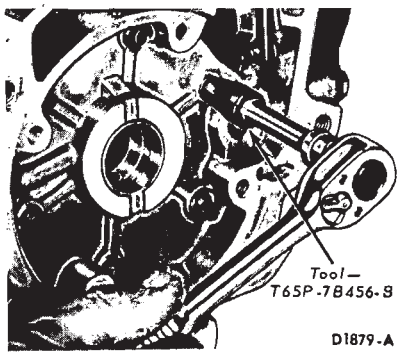


FIG. 47—Removing One-Way Clutch Outer Race Attaching Bolts

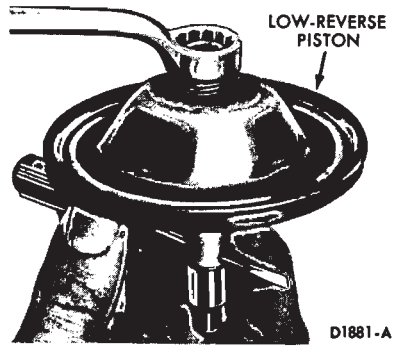


FIG. 49—Removing or Installing Low-Reverse Servo Piston

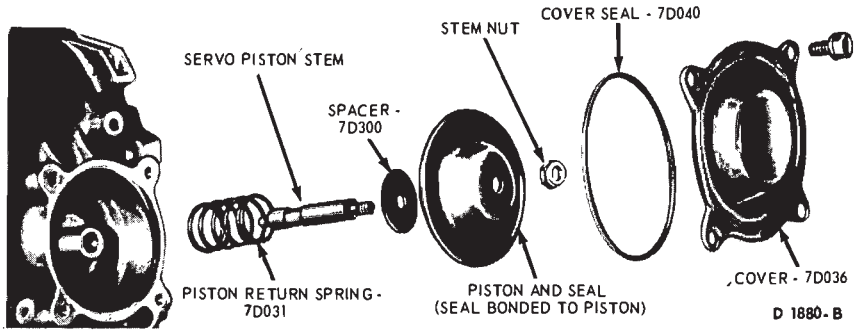


FIG. 48—Low-Reverse Servo Disassembled

PARTS REPAIR OR REPLACEMENT

During the repair of the subassemblies, certain general instructions which apply to all units of the transmissions must be followed. These instructions are given here to avoid unnecessary repetition.

Handle all transmission parts carefully to avoid nicking or burring the bearing or mating surfaces.

Lubricate all internal parts of the transmission before assembly with clean automatic transmission fluid. **Do not use any other lubricants except on gaskets and thrust washers which may be coated with vaseline to facilitate assembly.** Always install new gaskets when assembling the transmission.

Tighten all bolts and screws to the recommended torque as outlined in the Specification Section.

TRANSMISSION CASE AND LINKAGE REPAIR

Low-Reverse Servo

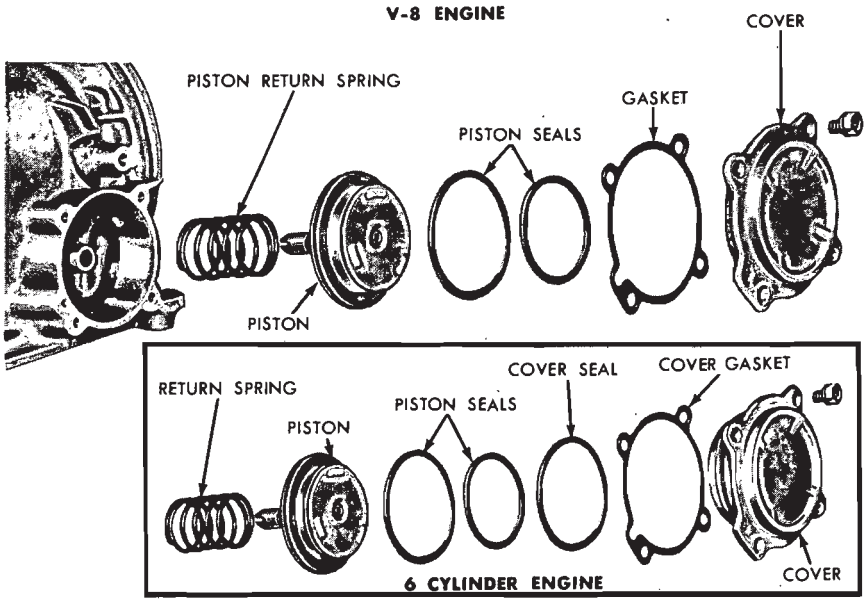
1. Remove the four servo cover-to-case attaching bolts.
2. Remove the servo cover, cover seal, servo piston and piston return spring from the case (Fig. 48).
3. The servo piston seal is bonded to the piston. If the seal has to be replaced, replace the piston assembly which includes the seal. Disassemble the servo piston from the piston stem by inserting a small screwdriver in the hole of the piston stem and removing the piston attaching nut (Fig. 49).

Position the spacer (Fig. 48) on the piston stem if it was previously removed. Install the new servo piston and attaching nut on the stem, torque the nut to specification.

4. Place the piston return spring in the servo bore of the case. Lubricate the piston seal with clean transmission fluid and install the servo pistion into the bore of the case.
5. Place a new cover seal on the cover and install the servo cover. Install the four cover attaching bolts. Torque the cover-to-case retaining bolts to specifications.

Intermediate Servo

1. Remove the transmission identification tag and the four servo cover to case attaching bolts.
2. Remove the servo cover, gasket, servo piston, and piston return spring from the case (Fig. 50).
3. Remove the intermediate servo piston from the cover.
4. Remove the seal rings from the servo piston and cover.
5. Install a new seal on the cover and servo piston. Figure 51 shows the correct servo piston and cover for each transmission model. Lubricate the seals with clean transmission



D1882-A

FIG. 50—Intermediate Servo Disassembled

Vehicle	Engine	Transmission	Cover ① And Servo Ident.	Spring	
				Free Length	Paint Stripe
Ford, Meteor	302-2V	PEA-M2, N2	A	2.480	White
Fairlane, Montego, Falcon, Mustang	302-2V	PEE-M1, V1, AC1			
Ford	240-1V	PEA-A3	B	2.480	White
Fairlane, Montego, Mustang, Falcon	250-1V	PEE-AD1, AE1, AF1			
Mustang, Falcon, Maverick	170-1V, 200-1V	PEB	W	2.480	White
Mustang, Fairlane, Montego, Ford, Meteor	351-2V	PEF	R	2.480	White
Maverick	170-1V 200-1V	PEG-A1	Y	2.76	Blue
①Identification Letter Cast in Cover and End of Servo					

CD2122-A

FIG. 51—Intermediate Servo Piston, Cover and Spring Identification

fluid. Install the piston into the cover. Be careful not to damage the piston seal.

6. Install the piston return spring in the servo bore of the case.

7. Place a new gasket on the servo cover. Position the servo piston and cover assembly into the case with the piston stem slot in a horizontal position to engage the strut. Use two 5/16—18 bolts, 1 1/4 inch long, 180 degrees apart, to position the cover against the case. Install two cover attaching bolts. Remove the two 1 1/4 inch bolts and install the transmission identification tag and the other two cover attaching bolts. Torque the bolts to specifications.

Downshift and Manual Linkage

1. Apply penetrating oil to the outer lever attaching nut to prevent breaking the inner lever shaft. On C4 automatic transmissions, remove the downshift outer lever nut and remove the downshift outer and inner levers. From inside the transmission case, remove the upper retaining ring from the manual lever link (Fig. 52). Remove the upper end of the lever link from the case retaining pin.

2. From the back of the transmission case, remove the upper retaining ring and flat washer from the parking pawl link (Fig. 53). Remove the pawl link from the case retaining pin.

3. From the back of the transmission case, remove the parking pawl link, toggle rod, and manual lever link as an assembly (Fig. 54).

4. Remove the rear parking pawl link lower retaining ring, flat washer and link from the toggle rod (Fig. 52).

5. Remove the manual lever link, lower retaining ring, flat washer, and link from the toggle rod.

6. Install the manual and parking pawl links, flat washers and retaining rings to the toggle rods.

7. Remove the inner manual lever attaching nut and lever. Remove the outer manual lever from the case.

8. To remove the manual lever seal, use the tools shown in Fig. 55. To install the new seal, use a driver that fits the ID of the seal.

9. Install the outer manual lever in the case. Install the inner manual lever and attaching nut with the chamfer facing toward the lever (Fig. 52). Torque the nut to specification.

10. From the back of the transmission case, install the parking toggle rod and link assembly into the case (Fig. 54).

11. Install the parking pawl link on the case retaining pin. Install the flat washer and link retaining ring (Fig. 53).

12. Position the inner manual lever behind the manual lever link, **with the cam on the lever contacting the lower link pin.**

13. Install the upper end of the manual lever link on the case retaining pin. Install the retaining ring.

14. Operate the manual lever and check for correct linkage operation.

15. Install the inner and outer downshift levers if so equipped. Torque the attaching nut to specification.

Bushing Replacement—Case

1. Remove the transmission case bushing as shown in Fig. 56.

2. Install the transmission case bushing with the tool shown in Fig. 56.

Thread Repair-Case

Thread service kits may be purchased from local jobbers or the Heli-Coil Corporation. To repair a damaged thread, the following procedures should be carefully followed.

1. Drill out the damaged threads, **using the same drill size as the thread OD.** For example, use a 5/16-inch

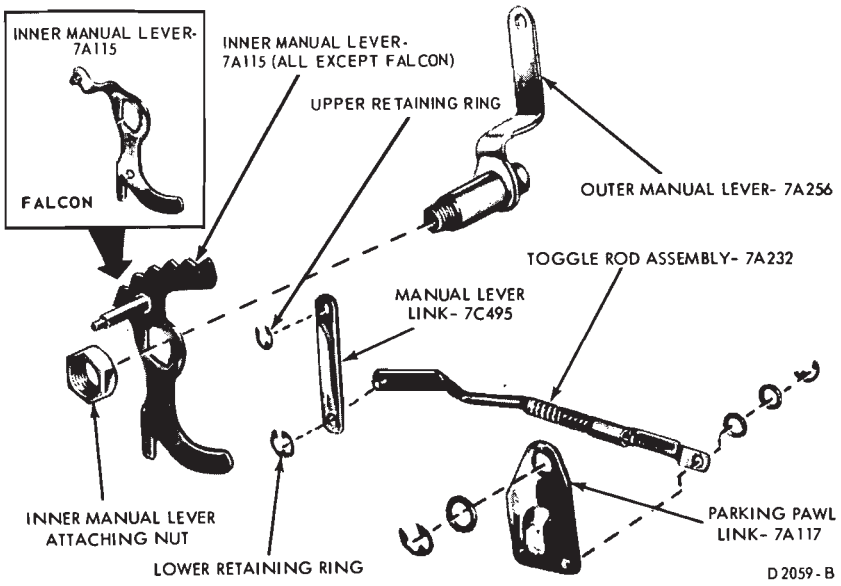


FIG. 52—Transmission Case Internal Linkage

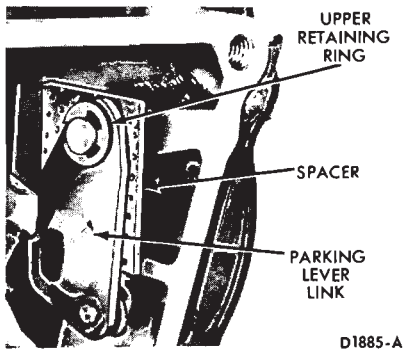


FIG. 53—Parking Pawl Link

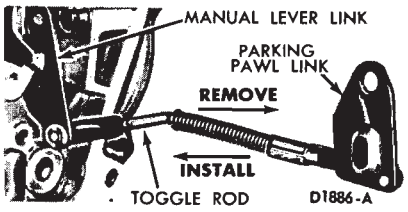


FIG. 54—Removing or Installing Parking Pawl Link

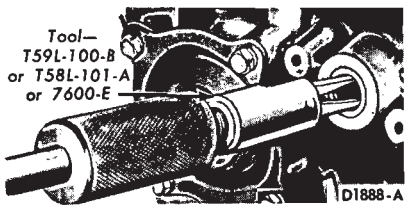


FIG. 55—Removing Manual Lever Seal

drill for a 5/16-18 thread.

2. Select the proper **special** tap and tap the drilled hole. The tap is marked for the size of the thread being repaired. Thus, the special tap marked 5/16-18 will not cut the same thread as a standard 5/16-18 tap. It does cut a thread large enough to accommodate the insert, and after the insert is installed the original thread size (5/16-18) is restored.

3. Select the proper coil inserting tool. These tools are marked with the thread size being repaired. Place the insert on the tool and adjust the sleeve to the length of the insert being used.

Press the insert against the face of the tapped hole. Turn the tool clockwise and wind the insert into the hole until the insert is 1/2 turn below the face.

4. Working through the insert, bend the insert tang straight up and down until it breaks off at the notch.

5. If the inserts are not properly installed, they can be removed with the extractor tool. Place the extractor tool in the insert so that the blade rests against the top coil 1/4 to 1/2 turn away from the end of the coil. Tap the tool sharply with a hammer so that the blade cuts into the insert. Exert downward pressure on the tool and turn it counterclockwise until the insert is removed.

CONTROL VALVE BODY C4 AUTOMATIC —ALL EXCEPT FALCON

Disassembly

When the main control is disassembled and the valve body-to-screen gasket is removed the gasket should not be cleaned in a degreaser, solvent or any type of detergent solution. To clean the gasket, wipe it off with a lint free cloth.

1. Remove the eight screws that attach the oil screen to the body and remove the screen and gasket (Fig. 57). Be careful not to lose the throttle pressure limit valve and spring when separating the oil screen from the valve body.

2. Remove the nine attaching screws from the underside of the lower valve body. Separate the lower valve body, gasket, separator plate and hold-down plate (Fig. 58) from the upper valve body. Be careful not to lose the upper valve body shuttle valve and check valve when separating

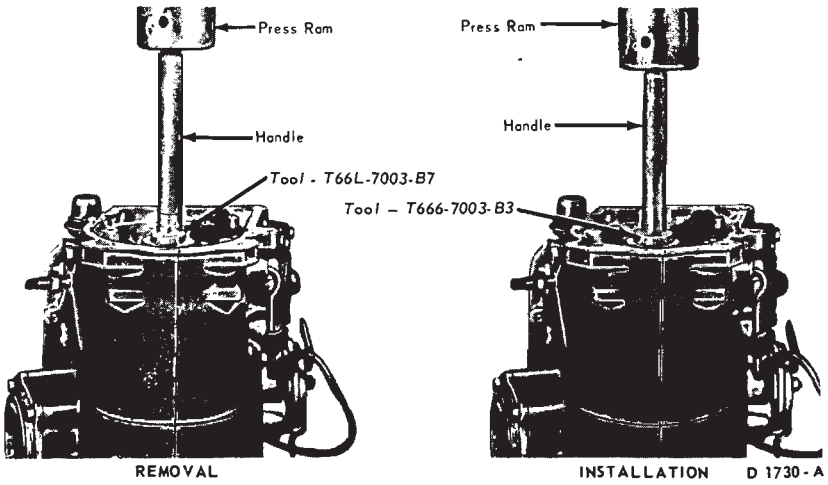


FIG. 56—Replacing Transmission Case Bushing

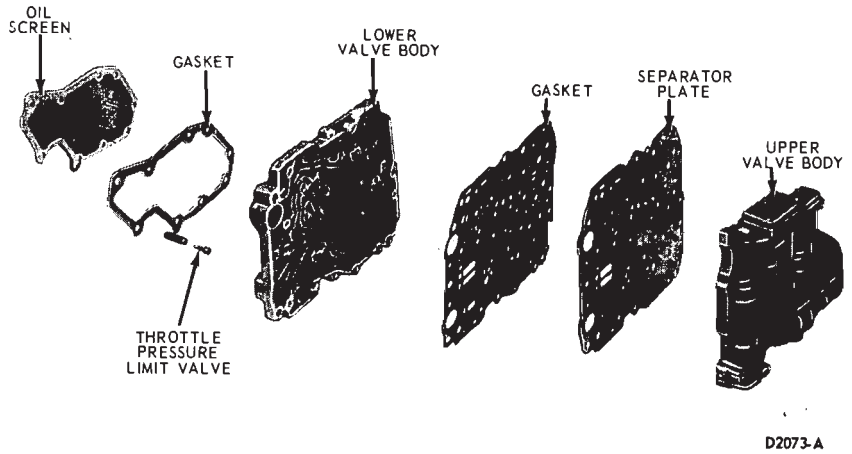


FIG. 57—Upper and Lower Valve Bodies Disassembled—C4 Automatic—All Except Falcon

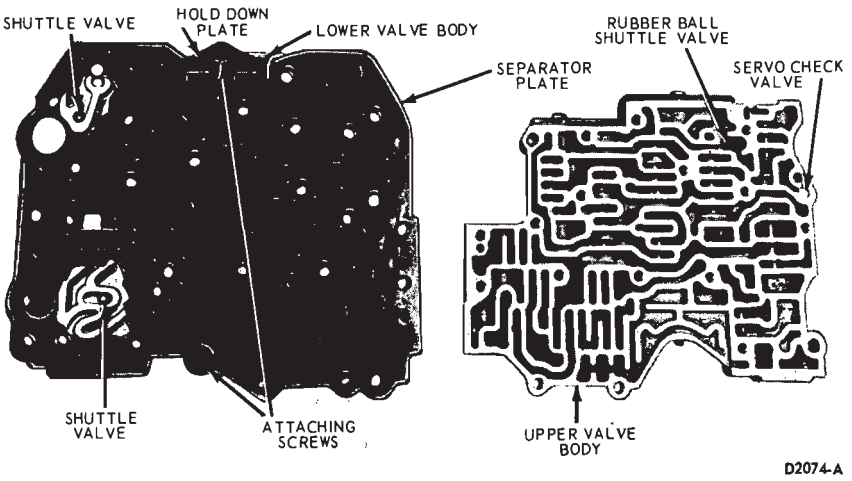


FIG. 58—Separating Upper and Lower Valve Bodies—C4 Automatic—All Except Falcon

the upper and lower valve bodies.

3. Slide the manual valve out of the body.

4. Carefully pry the low servo modulator valve retainer from the body and remove the retainer plug, spring and valve from the body. While working in the low servo modulator valve bore, pry the downshift valve retainer from the body and remove the spring and downshift valve (Fig. 59).

5. Depress the throttle booster plug and remove the retaining pin. Remove the plug, valve and spring.

6. Remove the cut-back valve and transition valve cover plate from the valve body (Fig. 59).

7. Remove the cut-back valve from the body.

8. Remove the transition valve spring, transition valve, 2-3 back-out valve and spring from the body.

9. Remove the 1-2 shift valve and 2-3 shift valve cover plate from the body.

10. Remove the 2-3 shift valve, spring and throttle modulator valve from the body.

11. Remove the 1-2 shift valve, D2 valve and spring from the body.

12. Remove the intermediate servo retaining pin and remove the intermediate accumulator retainer, valve and spring from the body.

13. Press the main oil pressure booster valve inward and remove the retaining pin. Remove the main oil pressure booster valve, sleeve, springs, retainer and the main oil pressure regulator valve.

14. Remove the line coasting boost valve retainer from the body and remove the spring and line coasting boost valve.

Assembly

1. Place the two shuttle valves in the lower body as shown in Figure 58. Position the gasket, separator plate and hold-down plate on the lower body and install the two attaching screws. Torque the screws to specification.

2. Insert the downshift valve (Fig. 59) into the body with the small diameter facing inward. Install the downshift valve spring and retainer. Insert the low servo modulator valve, spring and retainer plug in the body. Depress the plug and install the retainer.

3. Place the throttle booster valve spring, valve (small diameter end into spring) and plug into the body (Fig. 59). Depress the plug and install the retaining pin.

4. Place the spring, 2-3 back-out valve and the transition valve and spring in the body.

5. Place the cut-back valve in the body.

6. Secure the cut-back and the transition valve cover plate to the body with the two attaching screws. Torque the screws to specification.

7. Place the throttle modulator valve, spring and 2-3 shift valve in the body.

8. Place the springs, D2 valve and the 1-2 shift valve in the body.

9. Secure the 1-2 shift valve and the 2-3 shift valve cover plate to the body with the three attaching screws. Torque the screws to specification.

10. Place the spring, intermediate servo accumulator valve and retainer in the body. Depress the retainer and install the retaining pin.

11. Insert the line coasting boost valve and spring in the body. Depress the spring and install the retainer.

12. Insert the main oil pressure regulator valve and spring retainer in the body (Fig. 59). Install the two springs, sleeve and the main oil pressure booster valve in the body.

13. Hold the main oil pressure booster valve in place and install the retaining pin.

14. Slide the manual valve into the valve body. Make sure that the end with the two lands closest together is inserted first.

15. Position the rubber ball shuttle valve and servo check valve in the upper valve body (Fig. 58).

16. Position the lower valve body in place on the upper valve body and secure it with the nine attaching screws. Torque the screws to specification.

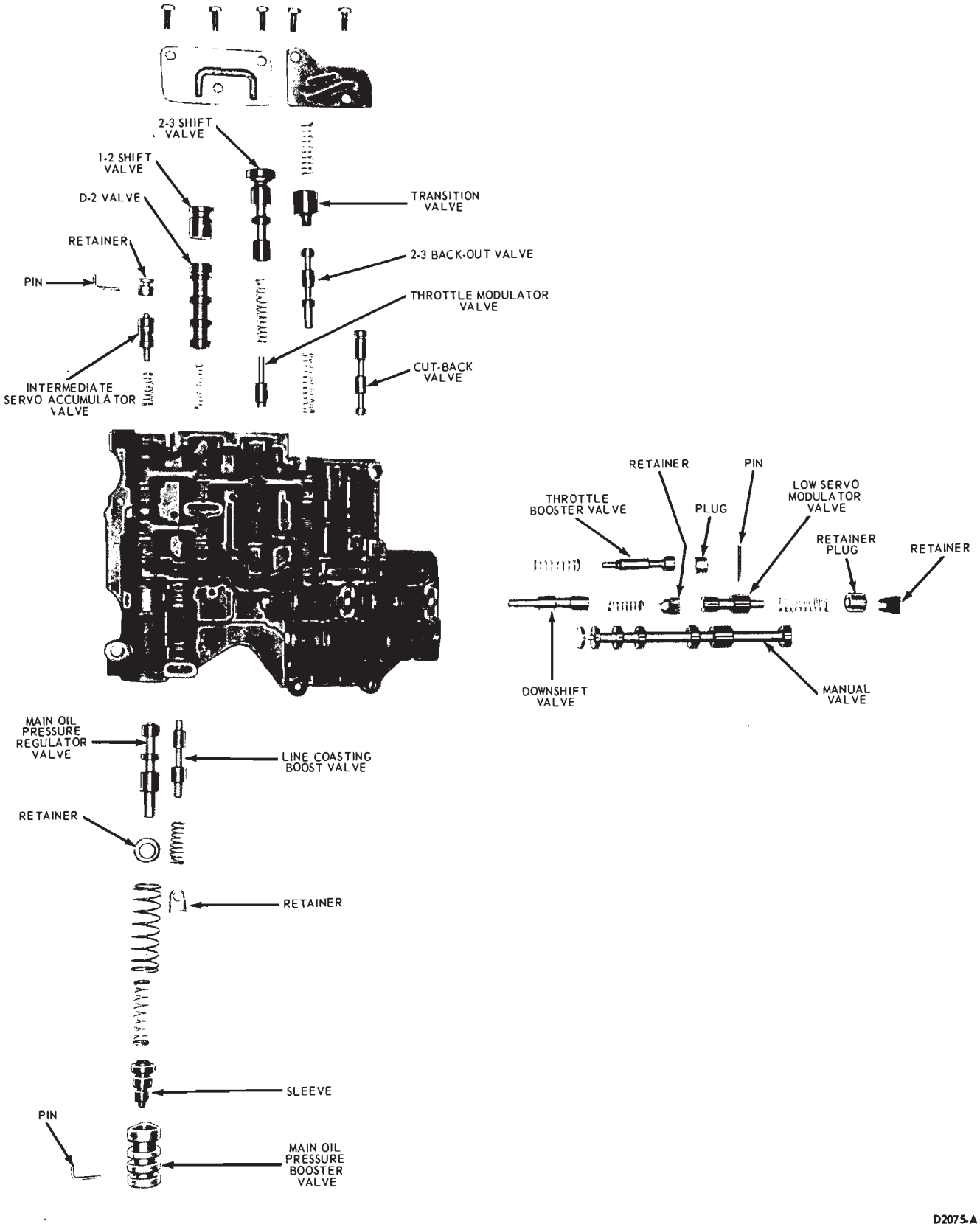


FIG. 59—Upper Valve Body Disassembled—C4 Automatic—All Except Falcon

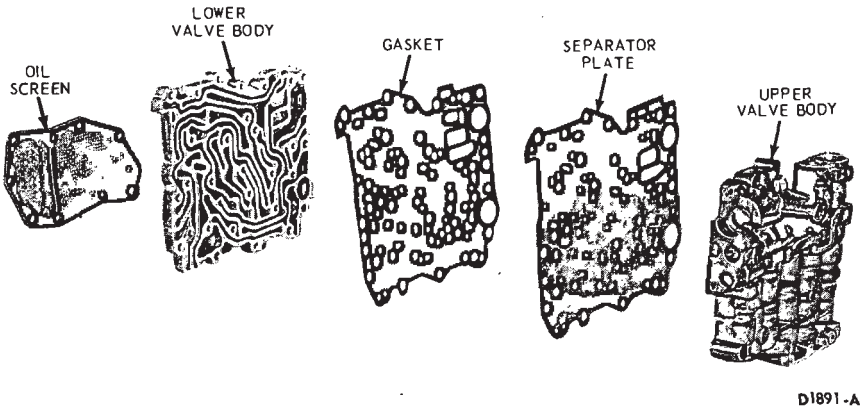


FIG. 60—Upper and Lower Valve Bodies Disassembled—C4 Automatic—Falcon

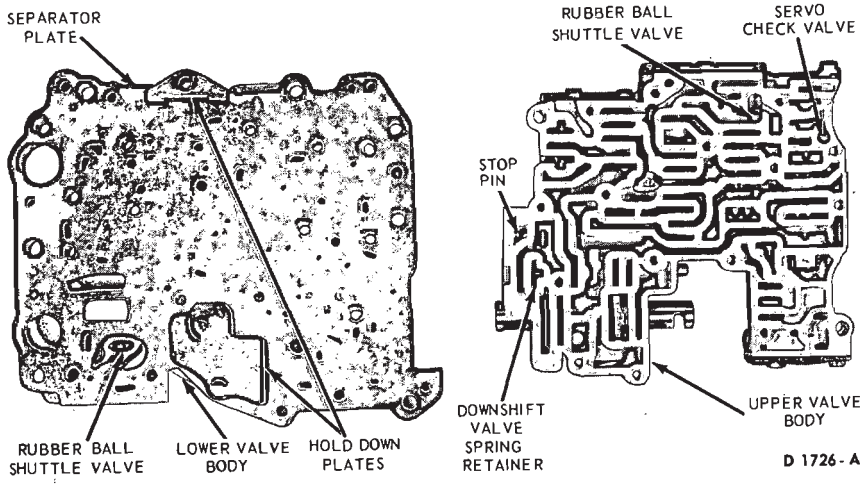


FIG. 61—Separating Upper and Lower Valve Bodies—C4 Automatic—Falcon

17. Position the throttle pressure limit valve and spring in the lower valve body (Fig. 57). Place the gasket and oil screen in position on the lower valve body and secure with the eight attaching screws. Torque the screws to specification.

CONTROL VALVE BODY—C4 AUTOMATIC—FALCON

Disassembly

1. Remove the eight screws that attach the oil screen to the body and remove the screen (Fig. 60).

2. Remove the seven attaching screws from the underside of the lower valve body. Separate the lower valve body, gasket, separator plate and hold-down plates (Fig. 61) from the upper valve body. Be careful not to lose the upper valve body rubber ball shuttle valve and spring when separating the upper and lower valve bodies.

3. Depress the manual valve detent spring with the tool shown in Fig. 62. Remove the manual valve spring retaining pin (roll pin) from the upper valve body. Remove the spring and detent plunger.

4. Slide the manual valve out of the body.

5. Remove the cut-back and the back-out valve cover plate from the valve body (Fig. 63).

6. Remove the cut-back valve from the body.

7. Remove the 2-3 back-out valve, spring and the manual low valve from the body.

8. Remove the 1-2 shift valve and 2-3 shift valve cover plate from the valve body.

9. Remove the 2-3 shift valve and

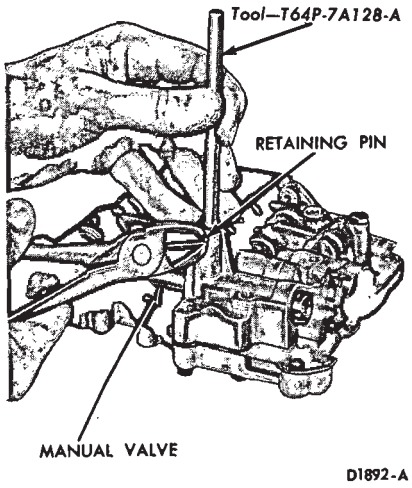


FIG. 62—Removing Manual Valve—C4 Automatic—Falcon

the throttle modulator valve from the body.

10. Remove the 1-2 shift valve, D2 valve and the spring from the body.

11. Remove the intermediate band accumulator valve cover plate from the valve body.

12. Remove the intermediate accumulator sleeve, 3-2 control valve, spring and the intermediate servo accumulator valve.

13. Remove the pressure booster valve, cover plate (Fig. 63).

14. Remove the pressure booster valve, sleeve, springs and the main regulator valve.

15. Remove the spring and the line pressure coasting boost valve (Fig. 63).

16. Carefully pry the downshift valve retainer from the body, then remove the spring and valve.

17. Hold the upper valve body as shown in Fig. 64 and depress the throttle booster valve plug to release the retaining pin. Remove the plug, valve and the spring.

18. Remove the two hold-down plates, separator plate and gasket from the lower body. Be careful not to lose the rubber ball shuttle valve when removing the separator plate and gasket from the lower valve body.

Assembly

1. Place the rubber ball shuttle valve in the lower body as shown in Fig. 61. Position the gasket, separator plate and the two hold-down plates on the lower valve body and install the four attaching screws and torque them to specification.

2. Place the throttle booster valve spring, valve (long end into spring)

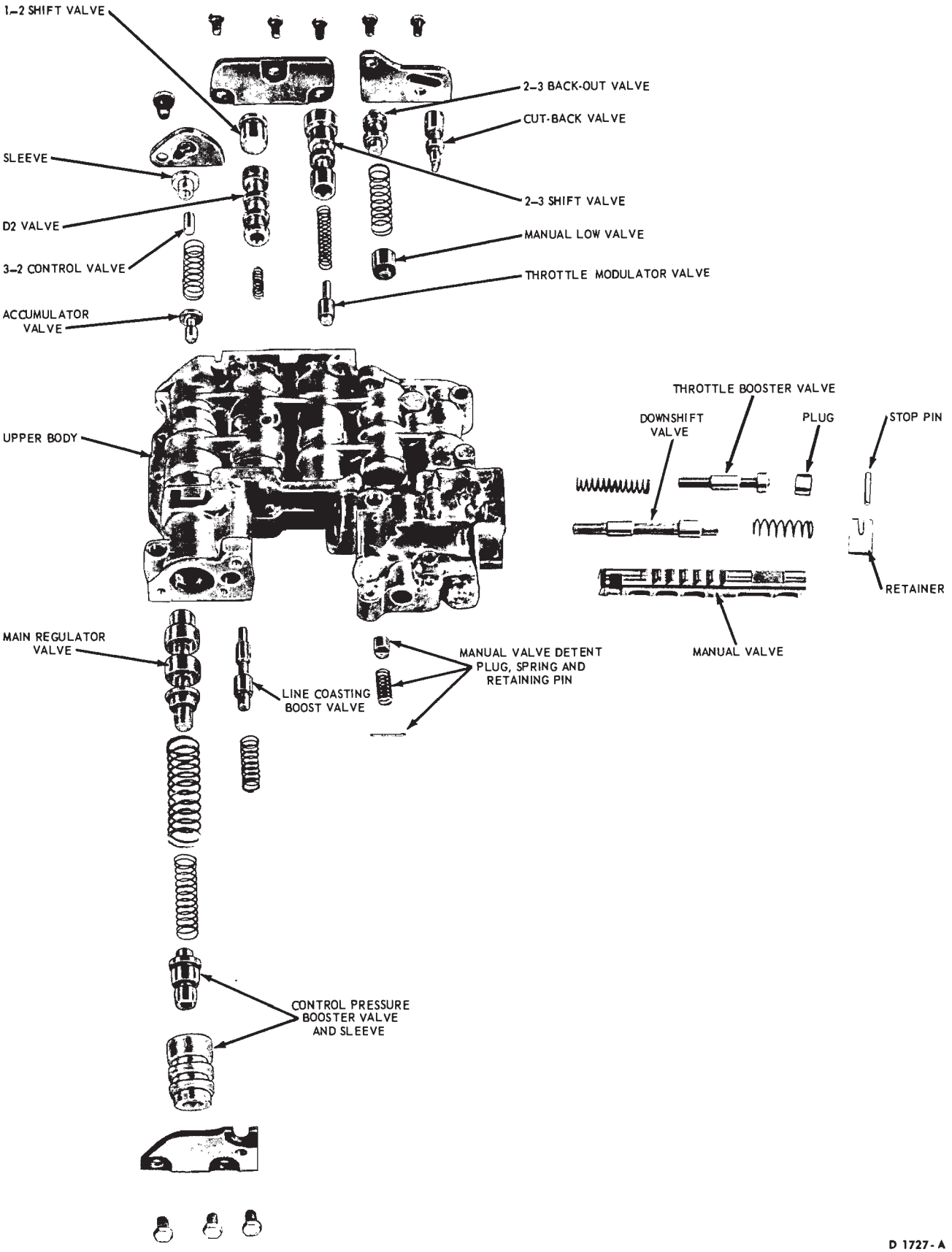


FIG. 63—Upper Valve Body Disassembled—C4 Automatic—Falcon

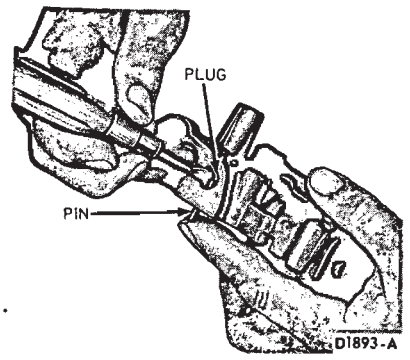


FIG. 64—Removing or Installing Throttle Booster Valve—C4 Automatic—Falcon

and the plug (Fig. 63). Depress the plug and install the retaining pin.

3. Insert the downshift valve into the body with the large diameter facing inward. Install the downshift valve spring and the retainer (Fig. 63).

4. Insert the line pressure coasting boost valve and spring in the body (Fig. 63).

5. Place the main regulator valve in the body (Fig. 63) with the large diameter facing inward. Install the two springs and the pressure booster valve and sleeve.

6. Hold the pressure booster valve cover plate in place and install the three attaching screws and torque them to specification.

7. Place the intermediate servo accummulator valve and spring in the body. Install the intermediate accummulator sleeve and 3-2 control valve. Secure the cover to the body with the attaching screw. Torque the screw to specifications.

8. Position the spring, D2 valve and the 1-2 shift valve in the body.

9. Place the throttle modulator valve, spring, and 2-3 shift valve in the body.

10. Secure the 1-2 shift valve and the 2-3 valve cover plate to the body and torque the screws to specifications.

11. Place the manual low valve, spring, and the 2-3 back-out valve in the body.

12. Place the cut-back valve in the body.

13. Secure the cut-back and the back-out cover plate to the body with two screws. Torque the screws to specifications.

14. Slide the manual valve into the body making sure that the notch for the manual lever is toward the inside and that the detent notches are facing upward.

15. Place the detent plunger and spring in the body. Depress the spring and install a new roll pin.

16. Position a new rubber check valve in the upper valve body (Fig. 61).

17. Position the check valve and spring in the upper valve body (Fig. 61). Place a new gasket, the separator plate and the lower valve body in place on the upper valve body and secure it with the seven attaching screws. Torque the screws to specifications.

18. Secure the oil screen to the body with the eight attaching screws. Torque the screws to specifications.

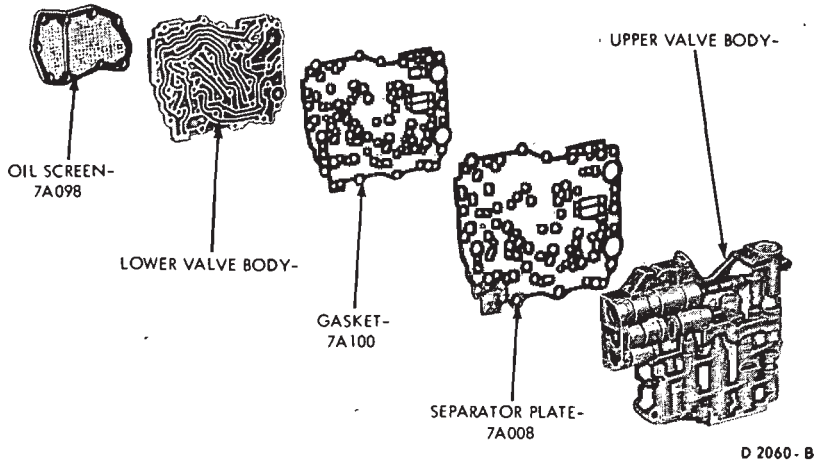


FIG. 65—Upper and Lower Valve Bodies Disassembled—C4S Semi-Automatic

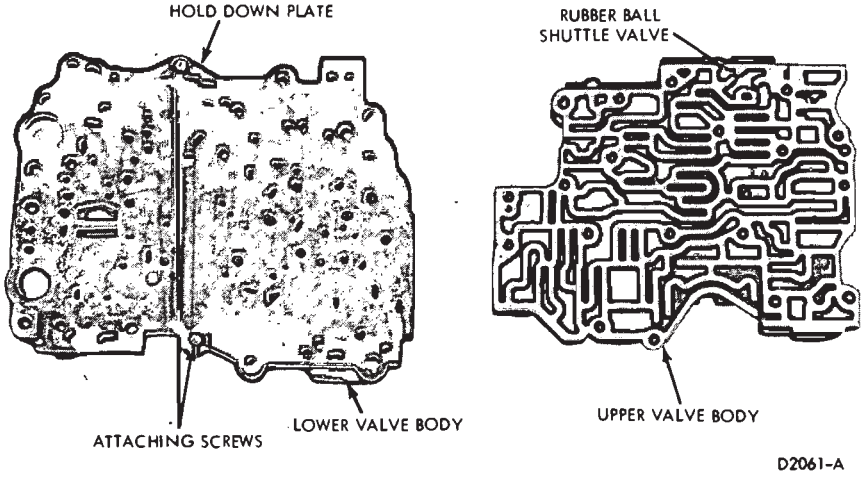


FIG. 66—Separating Upper and Lower Valve Bodies—C4S Semi-Automatic

CONTROL VALVE BODY C4S SEMI-AUTOMATIC

Disassembly

1. Remove the eight screws that attach the oil screen to the body and remove the screen (Fig. 65).

2. Remove nine attaching screws from the underside of the lower valve body and two attaching screws from the topside of the upper valve body. Then, separate the valve bodies (Fig. 66). Be careful not to lose the rubber ball shuttle valve when separating the upper and lower valve bodies.

3. Slide the manual valve out of the body (Fig. 67).

4. Carefully pry the low servo modulator valve retainer from the body and remove the retainer plug, spring, valve and plug.

5. Remove the cut-back and the 1-2 transition valve cover plate from the valve body (Fig. 67).

6. Remove the cut-back valve from the body.

7. Remove the 1-2 transition valve, 2-3 back-out valve and spring from

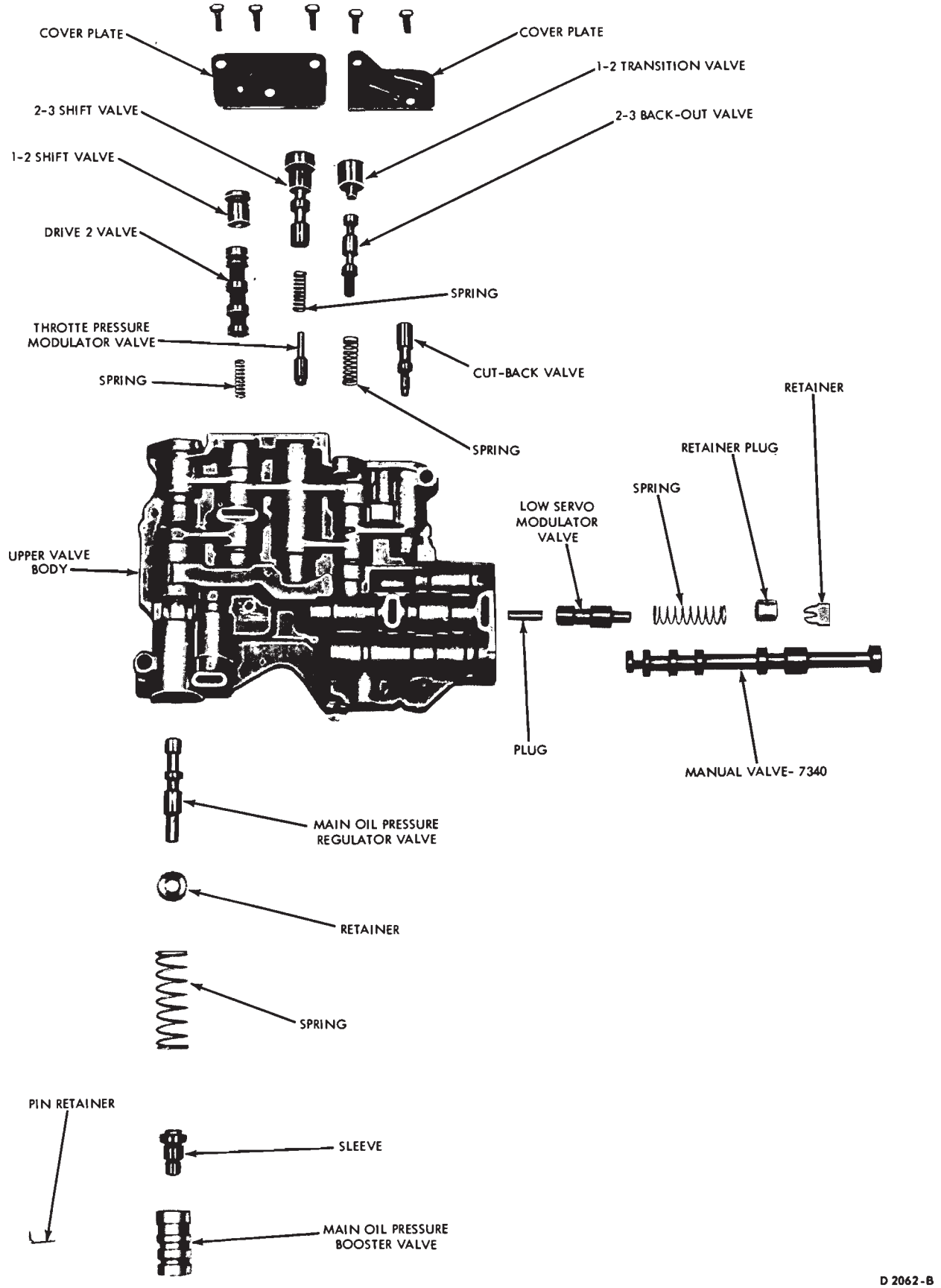


FIG. 67—Upper Valve Body Disassembled—C4S Semi-Automatic

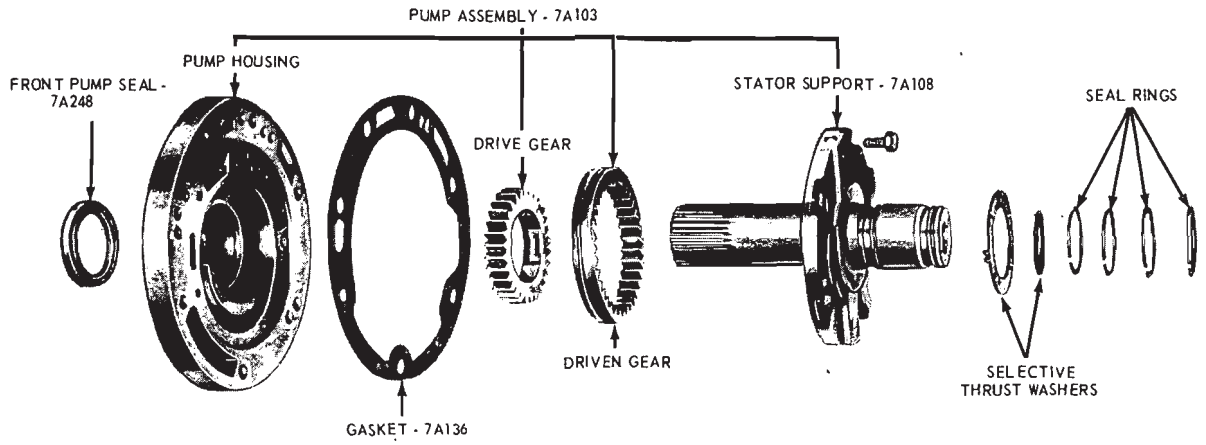


FIG. 68—Front Pump and Stator Support Disassembled

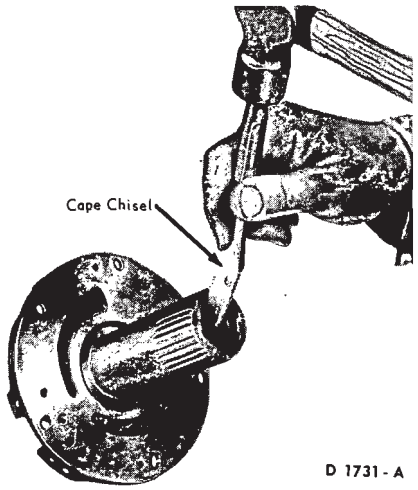


FIG. 69—Removing Stator Support Bushing

the body.

8. Remove the 2-3 shift valve and the 1-2 shift valve cover plate from the valve body.

9. Remove the 2-3 shift valve, spring and throttle pressure modulator valve from the body.

10. Remove the 1-2 shift valve, drive 2 valve and spring from the body.

11. Press the main oil pressure booster valve inward and remove the retaining pin. Remove the pressure booster valve, sleeve, spring, retainer and the main oil pressure regulator valve (Fig. 67).

12. Remove the two screws, hold-down plate, separator plate and gasket from the lower body.

Assembly

1. Position a new gasket, separator plate and the hold-down plate on the lower valve body (Fig. 66). Install the two attaching screws and torque them to specification.

2. Insert the main oil pressure regulator valve and spring retainer in the body (Fig. 67). Install the spring, sleeve and main oil pressure booster valve.

3. Hold the main oil pressure booster valve in place and install the retaining pin.

4. Position the spring, drive 2 valve and 1-2 shift valve in the body.

5. Place the throttle pressure modulator valve, spring and 2-3 shift valve in the body.

6. Secure the 2-3 shift valve and 1-2 shift valve cover plate to the body and torque the screws to specification.

7. Position the spring, 2-3 back-out valve and 1-2 transition valve in the body.

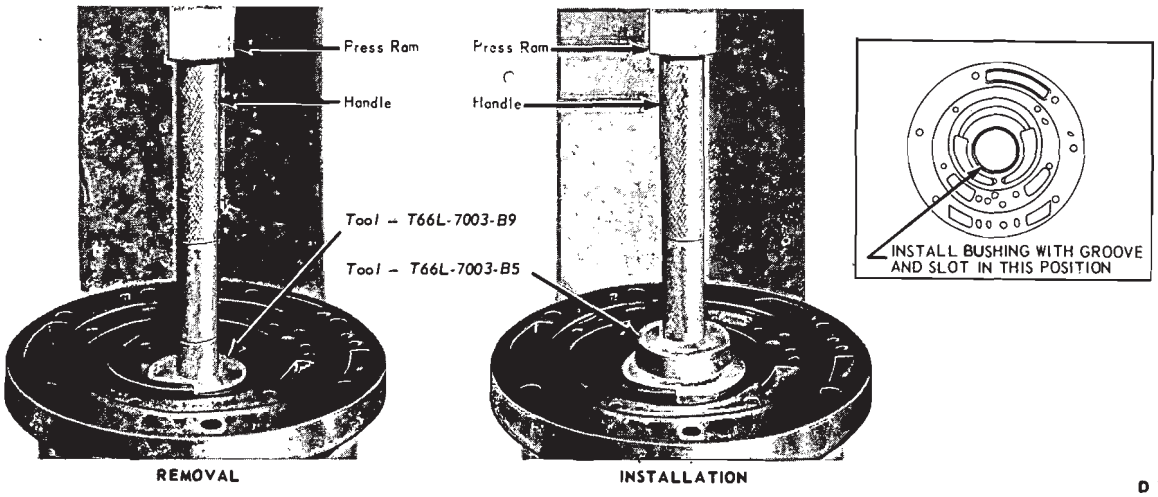


FIG. 70—Replacing Front Pump Housing Bushing

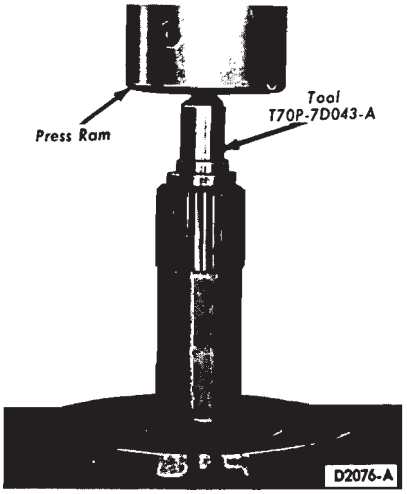


FIG. 71—Installing Stator Support Bushings

8. Place the cut-back valve in the body.

9. Secure the 1-2 transition valve and cut-back valve cover plate to the body and torque the screws to specification.

10. Place the plug, low servo modulator valve, spring and retainer plug in the body. Depress the retainer plug and install the retainer.

11. Slide the manual valve into the valve body. Make sure that the end with the two lands closest together is inserted first.

12. Position the rubber ball shuttle valve in the upper valve body (Fig. 66).

13. Position the lower valve body in place on the upper valve body and secure it with the 11 attaching screws. Torque the screws to specification.

14. Secure the oil screen (Fig. 65) to the body with the eight attaching screws. Torque the screws to specifications.

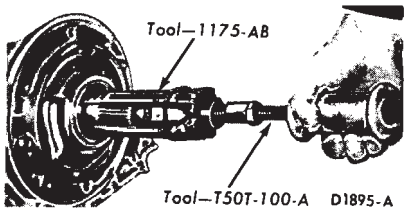


FIG. 72—Removing Front Pump Seal

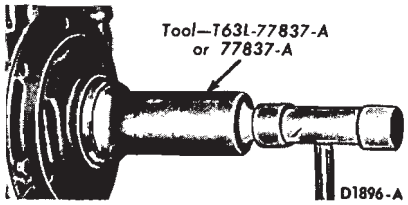


FIG. 73—Installing Front Pump Seal

FRONT PUMP

Disassembly

1. Remove the four seal rings from stator support.

2. Remove the five bolts that attach the stator support to the front pump housing. Remove the stator support from the pump housing (Fig. 68).

3. Remove the front and rear stator bushings if they are worn or damaged. Use the cape chisel (Fig. 69) and cut along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing.

4. Remove the drive and driven gears from the front pump housing.

5. Press the bushing from the front pump housing as shown in Fig. 70.

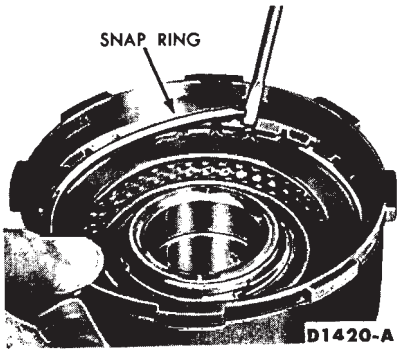


FIG. 74—Removing or Installing Reverse—High Pressure Plate Snap Ring

Assembly

1. Press a new bushing into the pump housing with the handle and tool shown in Fig. 70. Make sure the bushing is installed with the slot and groove positioned to the rear of the pump body and 60 degrees below the horizontal center line.

2. Install the drive and driven gears in the pump housing. Each gear has an identification mark on the side of the gear teeth that are chamfered. The chamfered side with the identification mark has to be positioned downward against the face of the pump housing.

3. Press new bushings into the stator support with the tool shown in Fig. 71. Use the long end of the tool for the front bushing and the short and for the rear bushing. **When installing the rear bushing, be sure the hole in the bushing is lined up with the lube hole in the stator support.**

4. Place the stator support in the pump housing and install the five attaching bolts. Torque the bolts to specifications.

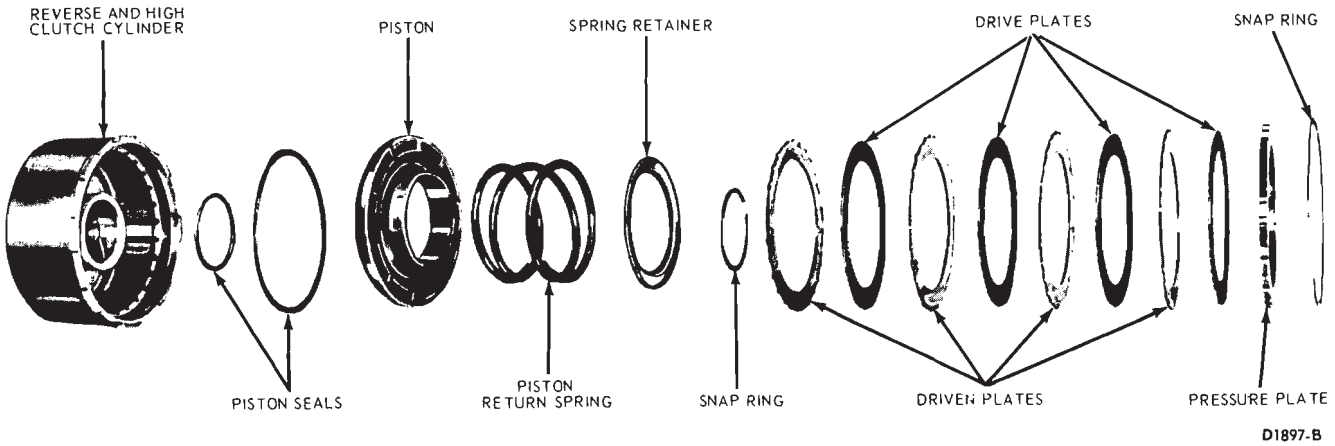


FIG. 75—Reverse-High Clutch Disassembled

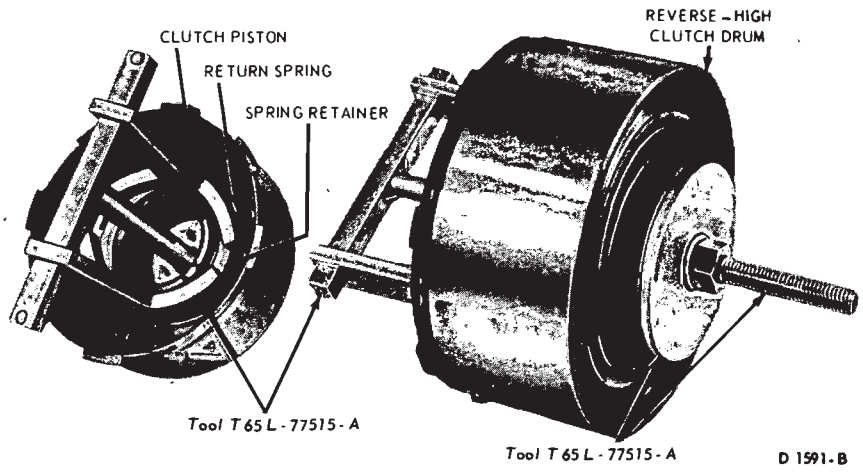


FIG. 76—Removing or Installing Reverse—High Clutch Piston Spring Snap Ring

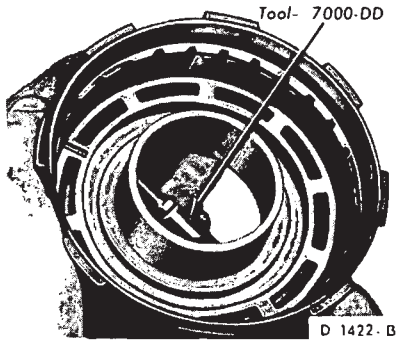


FIG. 77—Removing Reverse—High Clutch Piston

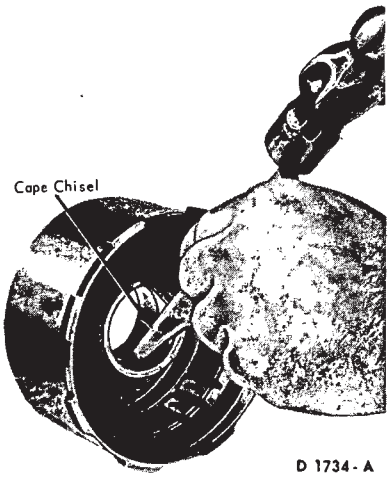


FIG. 78—Removing Reverse—High Clutch Bushing

5. Install the four seal rings on the stator support. The two large oil rings are assembled first in the oil ring grooves toward the front of the stator support (Fig. 68).

6. Check the pump for free rotation by placing the pump on the converter drive hub in its normal running position and turning the pump housing.

7. If the front pump seal must be replaced, mount the pump in the transmission case and remove the seal with the tool shown in Fig. 72. To install the new seal, use the tool shown in Fig. 73.

REVERSE-HIGH CLUTCH

Disassembly

1. Remove the pressure plate retaining snap ring (Fig. 74).

2. Remove the pressure plate, and the drive and driven clutch plates (Fig. 75). **If the composition clutch plates are to be reused, do not clean them in a vapor degreaser or with a detergent solution. Wipe the plates with a lint-free cloth.**

3. To remove the piston spring retainer snap ring, place the clutch hub in the arbor press. With the tools shown in Fig. 76, compress the piston return springs and remove the snap ring. When the arbor press ram is released, guide the spring retainer to clear the snap ring groove of the drum.

4. Remove the spring retainer and piston return spring.

5. Remove the piston by inserting air pressure in the piston apply hole of the clutch hub (Fig. 77).

6. Remove the piston outer seal from the piston and the piston inner seal from the clutch drum (Fig. 75).

7. Remove the drum bushing if it is worn or damaged. Use the cape chisel (Fig. 78) and cut a shallow groove 3/4 inch in length along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing. **To prevent leakage at the stator support O-rings, be careful not to nick or damage the hub surface with the chisel.**

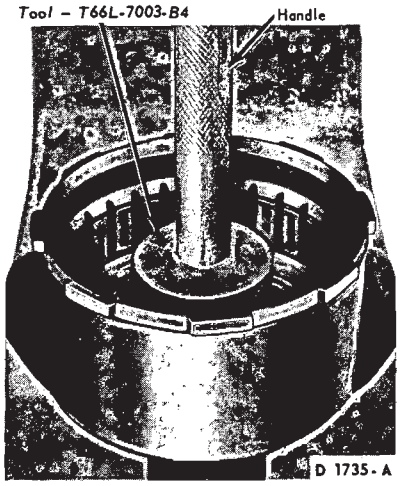


FIG. 79—Installing Reverse—High Clutch Bushing

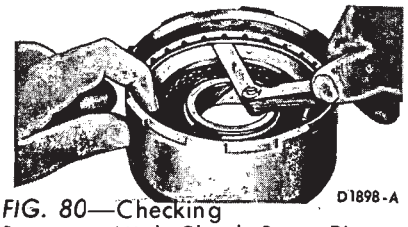


FIG. 80—Checking Reverse—High Clutch Snap Ring Clearance

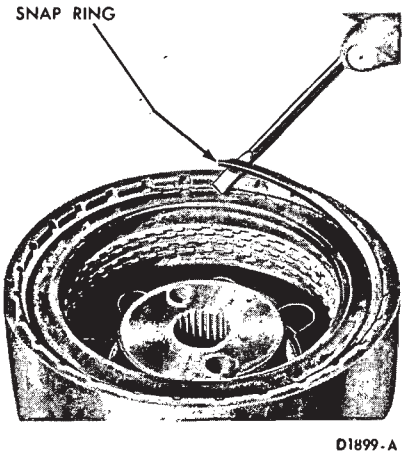


FIG. 81—Removing or Installing Forward Clutch Pressure Plate Snap Ring

Assembly

1. Position the drum in a press and press a new bushing into the drum with the handle and tool shown in

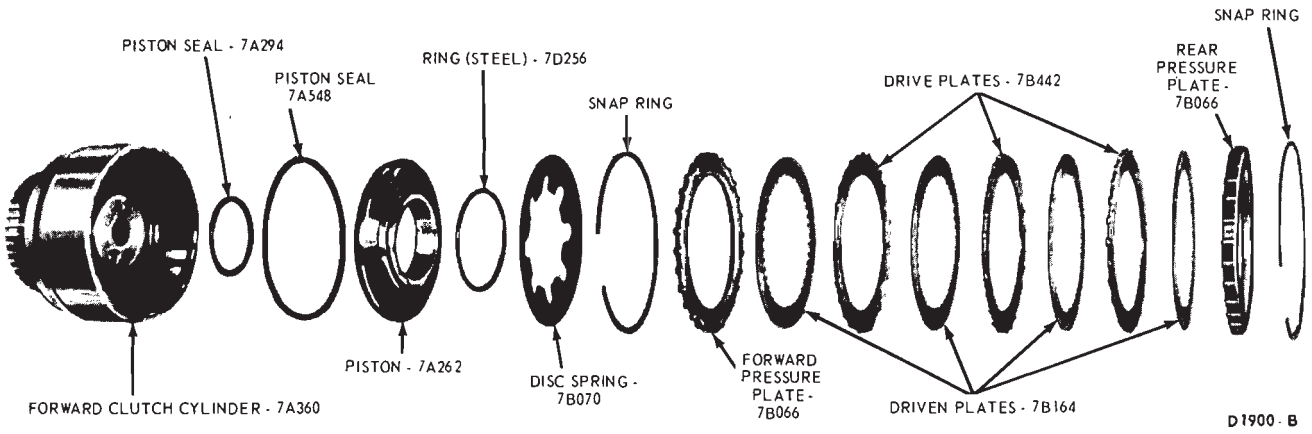


FIG. 82—Forward Clutch Disassembled

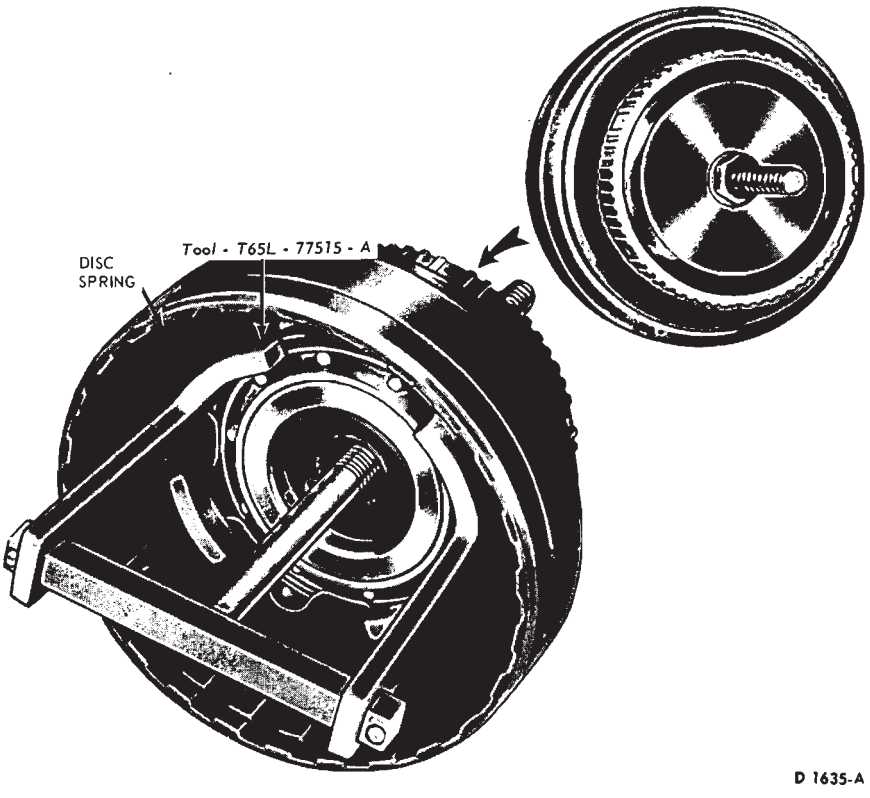


FIG. 83—Removing Disc Spring

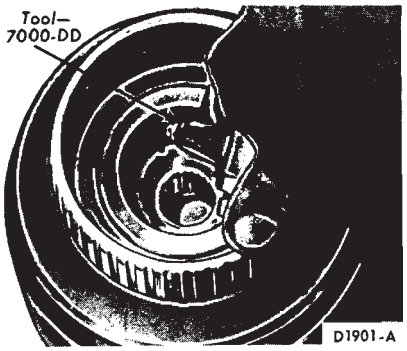


FIG. 84—Removing Forward Clutch Piston

Fig. 79.

2. Install a new inner seal in the clutch drum and a new outer seal on the clutch piston. Lubricate the seals with clean transmission fluid and install the piston into the clutch drum.

3. Place the clutch piston spring into position on the clutch piston. Place the spring retainer on top of the spring. To install the snap ring use the tools shown in Fig. 76.

As the press ram is moved downward, make sure the spring retainer is centered to clear the snap ring groove. Install the snap ring.

4. When new composition clutch plates are used, soak the plates in transmission fluid for fifteen minutes before installing them. Install the clutch plates alternately starting with a steel plate, then a non-metallic plate (Fig. 75). The last plate installed is the pressure plate. For the correct number of clutch plates required for each transmission model, refer to the Specification Section.

5. Install the pressure plate retaining snap ring (Fig. 75). Make sure the snap ring is fully seated in the snap ring groove of the clutch hub.

6. With a feeler gauge, check the clearance between the snap ring and the pressure plate (Fig. 80).

7. The pressure plate should be held downward as the clearance is checked. The clearance should be 0.050 to 0.071 inch. If the clearance is not within specifications, selective thickness snap rings are available in these thicknesses, 0.050-0.054, 0.064-0.068, 0.078-0.082 and 0.092-0.096 inch. Install the correct size snap ring and recheck the clearance.

FORWARD CLUTCH

Disassembly

1. Remove the clutch pressure plate retaining snap ring (Fig. 81).

2. Remove the pressure plate, and the drive and driven clutch plates from the clutch hub (Fig. 82).

3. Remove the disc spring retaining snap ring (Fig. 83).

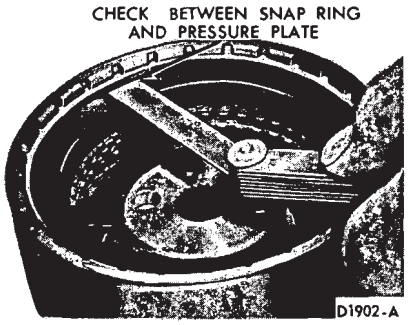


FIG. 85—Checking Forward Clutch Snap Ring Clearance

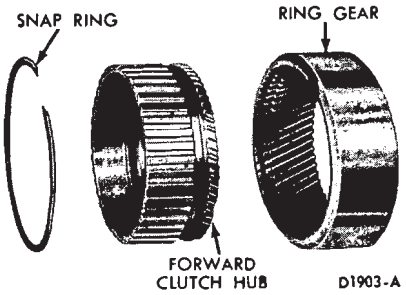


FIG. 86—Forward Clutch Hub and Ring Gear Disassembled

4. Apply air pressure at the clutch piston pressure hole (Fig. 84) to remove the piston from the clutch hub.
5. Remove the clutch piston outer seal and the inner seal from the clutch hub (Fig. 82).

Assembly

1. Install new clutch piston seals on the clutch piston and drum. Lubricate the seals with clean transmission fluid.
2. Install the clutch piston into the clutch hub. Install the disc spring and retaining snap ring (Fig. 82).
3. **Install the lower pressure plate with the flat side up and the radius side downward.** Install one non-metallic clutch plate and alternately install the drive and driven plates. Before installing new composition clutch plates, soak them in transmission fluid for fifteen minutes. The last plate installed will be the upper pressure plate. Refer to the Specification Section for the correct number of clutch plates for the applicable model transmission.
4. Install the pressure plate retaining snap ring (Fig. 82). Make sure the snap ring is fully seated in the ring groove of the clutch hub.

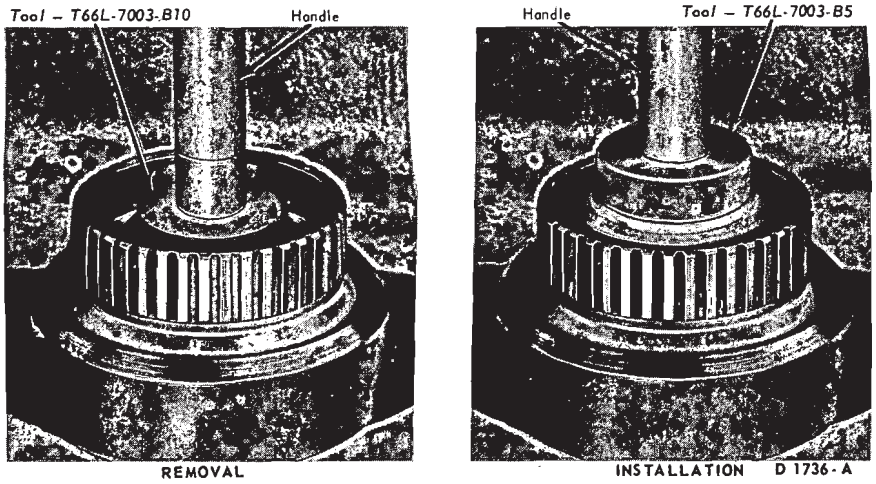


FIG. 87—Replacing Forward Clutch Hub Bushing

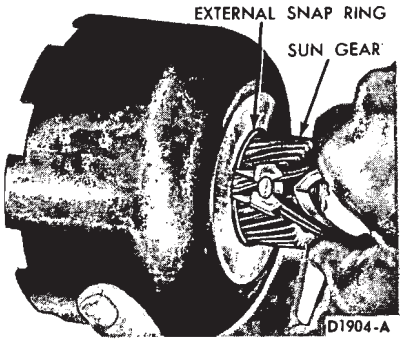


FIG. 88—Removing or Installing Sun Gear External Snap Ring

5. With a feeler gauge, check the clearance between the snap ring and the pressure plate (Fig. 85). Downward pressure on the plate should be used when making this check. The clearance should be 0.025-0.050 inch.
6. If the clearance is not within specifications, selective snap rings are available in these thicknesses: 0.050-0.054, 0.064-0.068, 0.078-0.082 and 0.092-0.096 inch. Insert the correct size snap ring and recheck the clearance.

FORWARD CLUTCH HUB AND RING GEAR

Disassembly

1. Remove the forward clutch hub retaining snap ring (Fig. 86).
2. Remove the forward clutch hub from the ring gear.
3. Press the bushing from the clutch hub as shown in Fig. 87.

Assembly

1. Install a new bushing into the clutch hub as shown in Fig. 87.
2. Install the forward clutch hub in the ring gear. Make sure the hub is bottomed in the groove of the ring gear.
3. Install the front clutch hub retaining snap ring. Make sure the snap

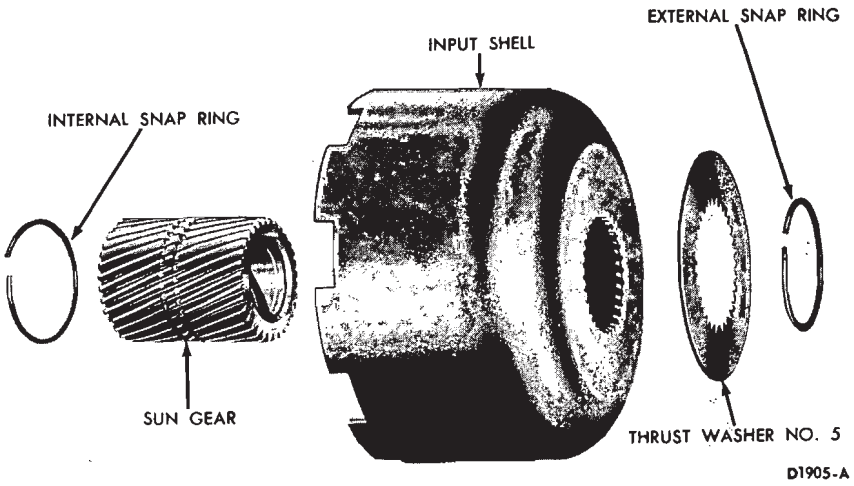


FIG. 89—Input Shell and Sun Gear Disassembled

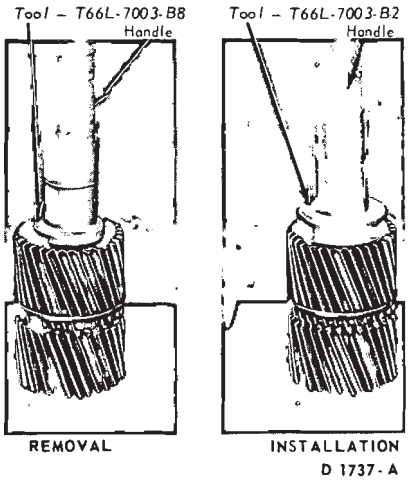


FIG. 90—Replacing Sun Gear Bushing

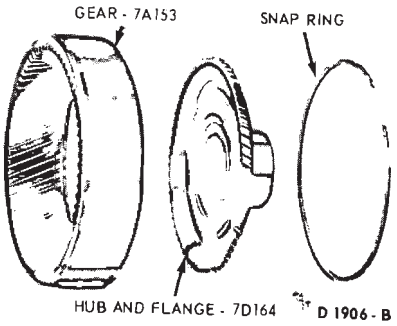


FIG. 91—Reverse Ring Gear and Hub Disassembled

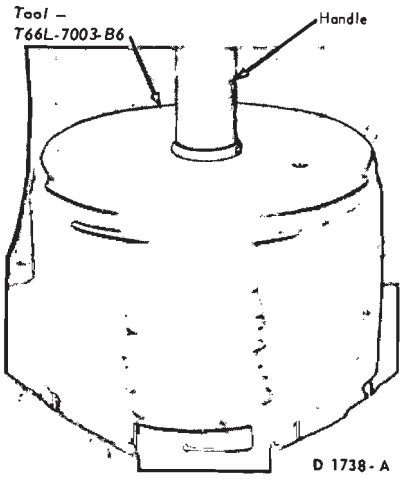


FIG. 92—Installing Low and Reverse Brake Drum Bushing

ring is fully seated in the snap ring groove of the ring gear.

INPUT SHELL AND SUN GEAR

Disassembly

1. Remove the external snap ring from the sun gear (Fig. 88).

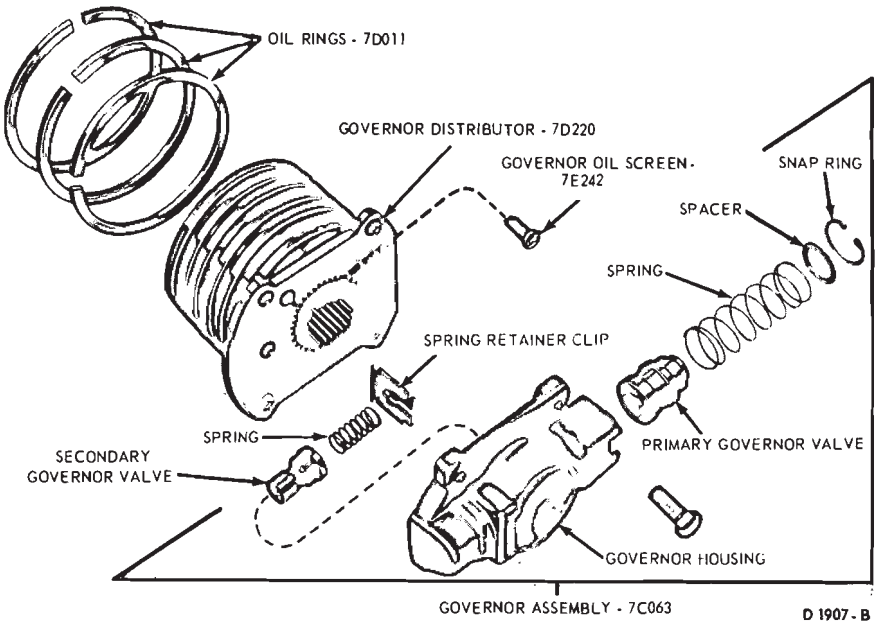


FIG. 93—Governor and Oil Distributor—C4 Automatic

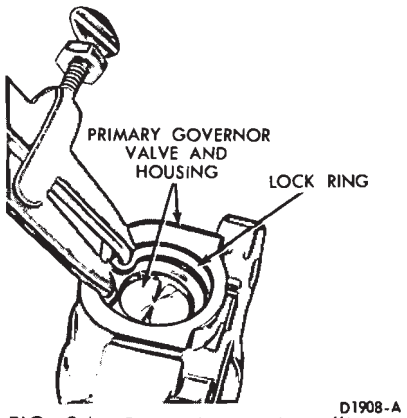


FIG. 94—Removing or Installing Retaining Ring

2. Remove thrust washer No. 5 from the input shell and sun gear (Fig. 89).
3. From inside the input shell, remove the sun gear. Remove the internal snap ring from the sun gear.
4. If the sun gear bushings are to be replaced, use the tool shown in Fig. 90 and press both bushings through the gear.

Assembly

1. Press a new bushing into each end of the sun gear with the tool shown in Fig. 90.
2. Install the internal snap ring on the sun gear. Install the sun gear in the input shell.
3. Install thrust washer No. 5 on the sun gear and input shell (Fig. 89).
4. Install the external snap ring on the sun gear (Fig. 88).

REVERSE RING GEAR AND HUB

Disassembly

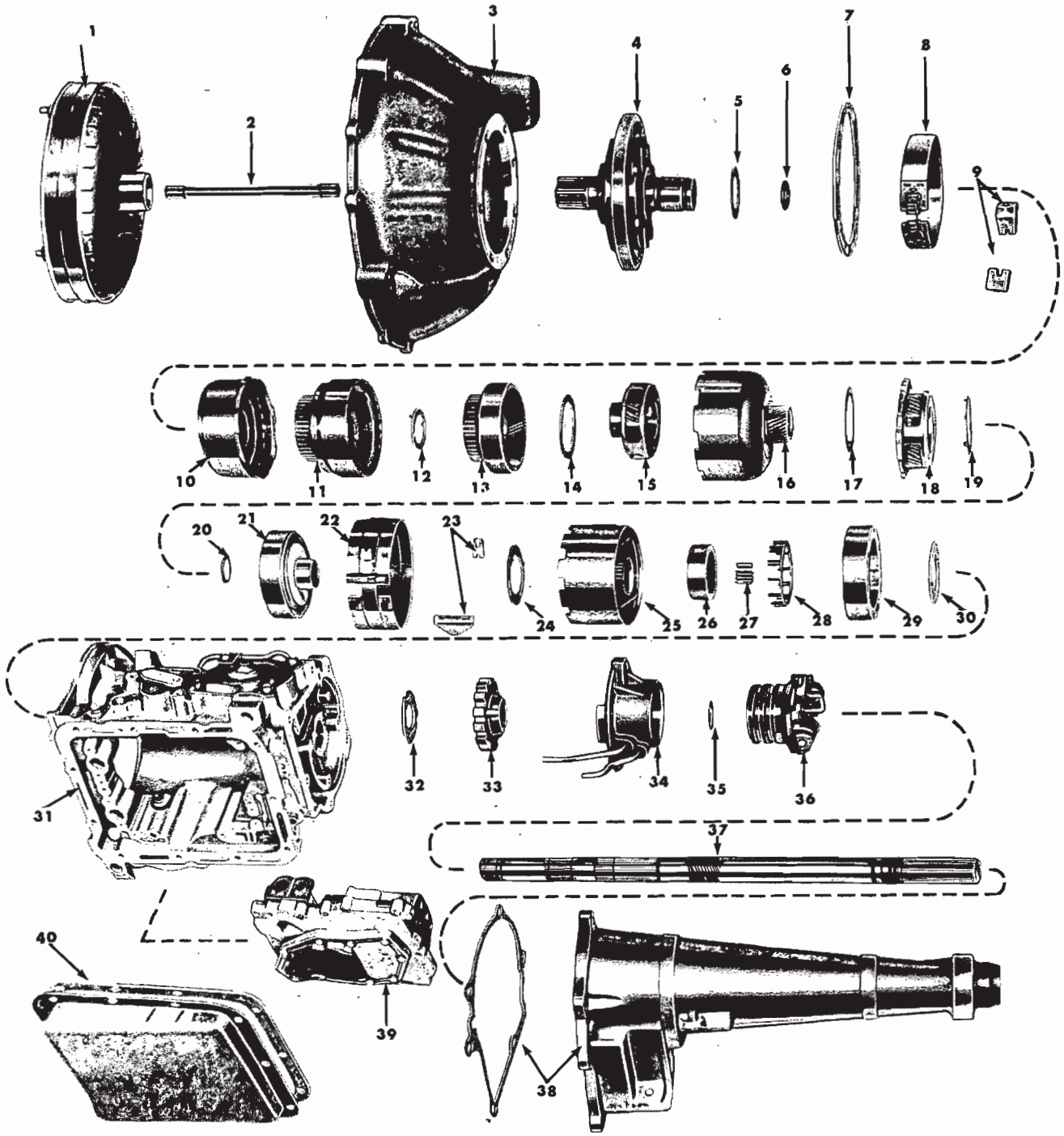
1. Remove the hub retaining snap ring from the reverse ring gear.
2. Remove the hub from the reverse ring gear (Fig. 91).

Assembly

1. Install the hub in the reverse ring gear. Make sure the hub is fully seated in the groove of the ring gear.
2. Install the snap ring in the reverse ring gear. Make sure the snap ring is fully seated in the snap ring groove of the ring gear.

LOW-REVERSE BRAKE DRUM BUSHING REMOVAL AND INSTALLATION

1. Replace the low reverse brake drum bushing if it is worn or damaged. To remove the bushing, use the cape chisel and cut along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing.
2. Install a new bushing with the tool shown in Fig. 92.



1. CONVERTER – 7902
2. INPUT SHAFT – 7D15
3. CONVERTER HOUSING – 7976
4. FRONT PUMP – 7A103
5. THRUST WASHER NO. 1
6. THRUST WASHER NO. 2
7. FRONT PUMP GASKET – 7A136
8. INTERMEDIATE BAND – 7D034
9. BAND STRUTS – 7D029
10. REVERSE AND HIGH CLUTCH DRUM
11. FORWARD CLUTCH AND CYLINDER
12. THRUST WASHER NO. 3
13. FORWARD CLUTCH HUB – 7B067 AND RING GEAR – 7A153
14. THRUST WASHER NO. 4
15. FRONT PLANET CARRIER – 7A398
16. INPUT SHELL – 7D064, SUN GEAR – 7D063 AND THRUST WASHER NO. 5
17. THRUST WASHER NO. 6
18. REVERSE PLANET CARRIER - 7D106
19. THRUST WASHER NO. 7
20. SNAP RING
21. REVERSE RING GEAR – 7A153 AND HUB – 7D164
22. LOW AND REVERSE BAND – 7D095
23. BAND STRUTS – 7A125
24. THRUST WASHER NO. 8
25. LOW AND REVERSE DRUM – 7C498
26. ONE-WAY CLUTCH INNER RACE – 7D171
27. ROLLER (12) – 7190 AND SPRING (12) – 7D170
28. SPRING AND ROLLER CAGE – 7D191
29. ONE-WAY CLUTCH OUTER RACE – 7B456
30. THRUST WASHER NO. 9
31. CASE – 7005
32. THRUST WASHER NO. 10
33. PARKING GEAR – 7A233
34. GOVERNOR DISTRIBUTOR SLEEVE – 7C232
35. SNAP RING
36. GOVERNOR AND DISTRIBUTOR ASSY. – 7C053 (AUTOMATIC ONLY)
37. OUTPUT SHAFT – 7060
38. EXTENSION HOUSING – 7A039 AND GASKET – 7086
39. CONTROL VALVE BODY – 7A100
40. OIL PAN – 7A194 AND GASKET – 7A191

FIG. 95—Transmission Sub-Assemblies

D 1378-E

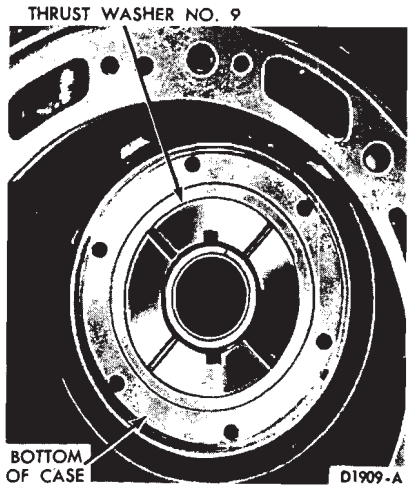


FIG. 96—Number 9 Thrust Washer Location

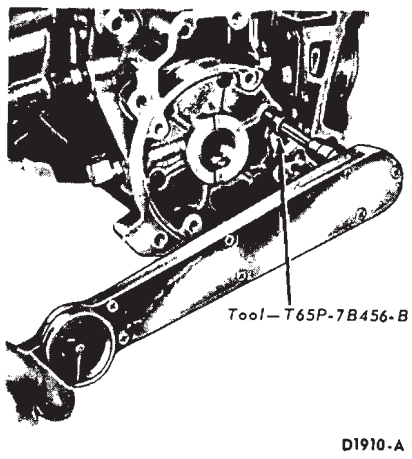


FIG. 97—Installing One-Way Clutch Outer Race Attaching Bolts

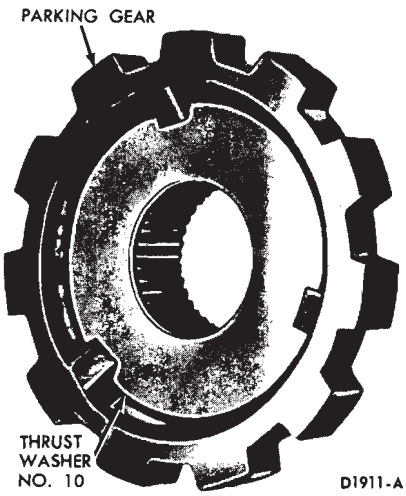


FIG. 99—Number 10 Thrust Washer Location

GOVERNOR AND OIL DISTRIBUTOR (C4 AUTOMATIC ONLY)

Disassembly

1. Remove the oil rings from the governor oil distributor (Fig. 93).
2. Remove the governor housing-to-distributor attaching bolts. Remove the governor from the oil distributor. Remove the governor oil screen.
3. Remove the primary governor valve retaining ring (Fig. 94). Remove the washer, spring, and primary governor valve from the housing.
4. Remove the secondary governor valve spring retaining clip, spring, and governor valve from the housing.
5. Install the secondary governor valve in the housing. Install the spring and retaining clip. **Make sure the clip is installed with the small concaved area facing downward, to hold the spring in the correct position.**

Assembly

1. Install the primary governor valve in the housing. Install the spring, washer and retaining ring. **Make sure the washer is centered in the housing on top of the spring and the retaining ring is fully seated in the ring groove of the housing.**
2. Install the governor oil screen.
3. Install the governor assembly on the oil distributor and torque the attaching bolts to specification.
4. Install the oil rings on the distributor. Check the oil rings for free rotation in the ring grooves on the oil distributor.

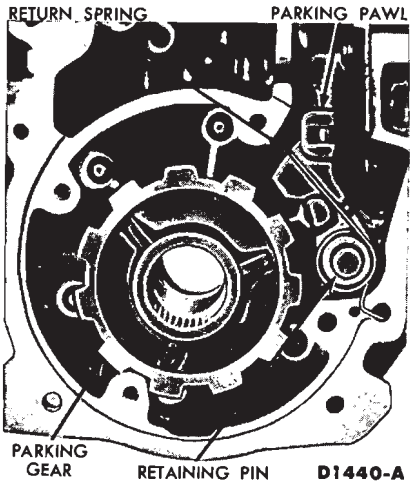


FIG. 98—Parking Pawl and Gear

FIG. 100—Governor and Reverse Ring Hub—Retaining Snap Ring Identification

ASSEMBLY OF TRANSMISSION

When assembling the transmission sub-assemblies (Fig. 95), make sure that the correct thrust washer is used between certain sub-assemblies. Lubricate remaining surfaces with transmission fluid. Vaseline should be used to hold the thrust washers in their proper location. If the end play is not within specifications after the transmission is assembled, either the wrong selective thrust washers were used, or a thrust washer came out of position during the transmission assembly operation.

1. Install thrust washer No. 9 inside the transmission case (Fig. 96).
2. Place the one-way clutch outer race inside the case. From the back of the case install the six outer race-to-case attaching bolts. **Torque the bolts to specification with the tools shown in Fig. 97.**
3. Place the transmission case in a vertical position with the back face of the case upward. Install the parking pawl retaining pin in the case (Fig. 98).
4. Install the parking pawl on the case retaining pin. Install the parking pawl return spring as shown in Fig. 89.
5. Install thrust washer No. 10 on the parking gear (Fig. 99). Place the gear and thrust washer on the back face of the case (Fig. 98).

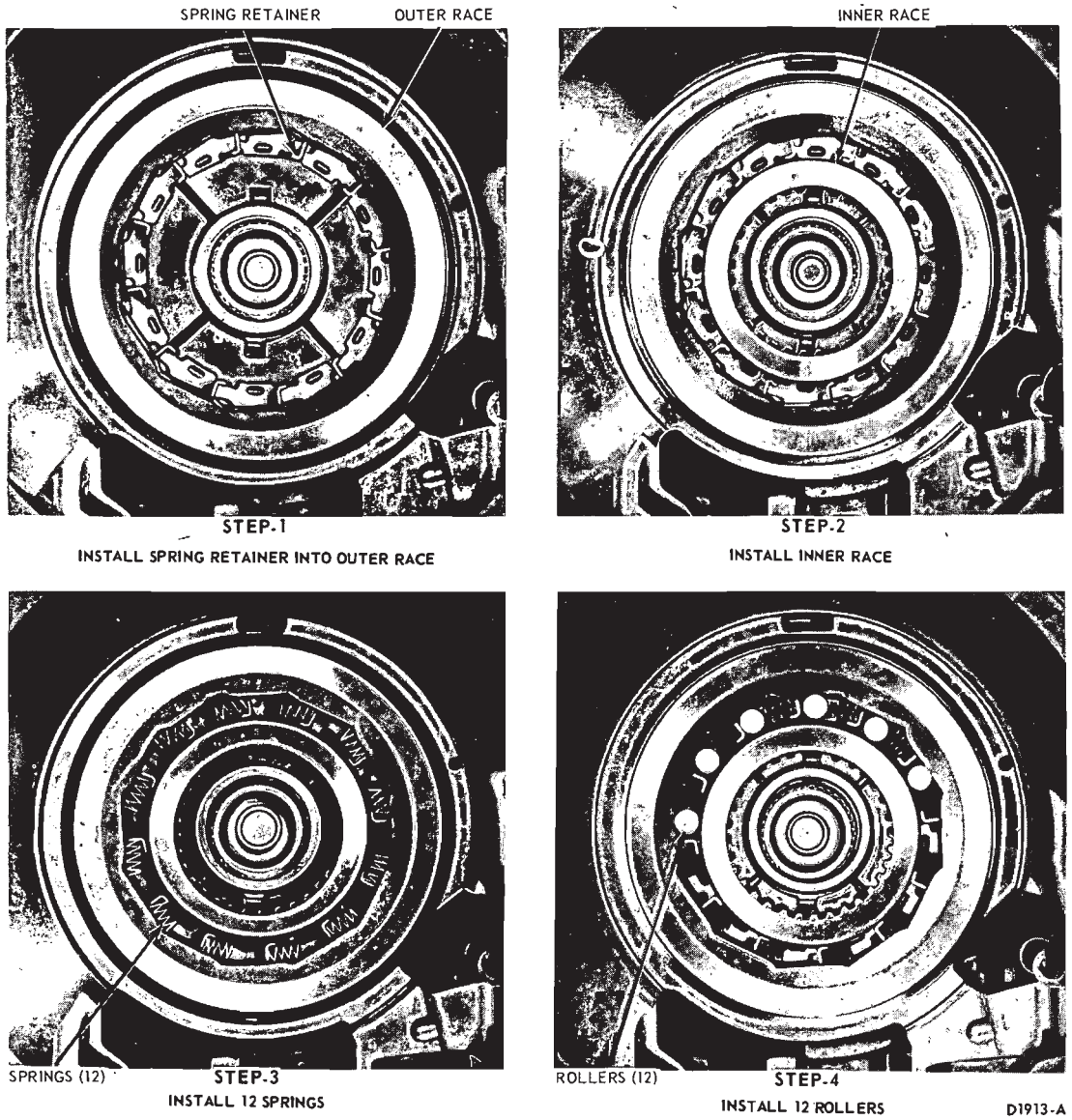


FIG. 101—Installing One-Way Clutch

6. Place the two distributor tubes in the governor distributor sleeve. Install the distributor sleeve on the case. As the distributor sleeve is installed, the tubes have to be inserted in the two holes in the case and the parking pawl retaining pin has to be inserted in the alignment hole in the distributor sleeve.

7. Install the four governor distributor sleeve-to-case attaching bolts and torque the bolts to specification.

8. On a C4 automatic transmission, install the governor distributor assembly on the output shaft. Install the distributor retaining snap ring (Fig. 45). Figure 100 shows the correct snap ring to be used.

9. On a C4 automatic transmission, check the rings in the governor distributor, making sure the rings are fully inserted in the ring grooves and will rotate freely. Install the output shaft and governor distributor assembly (if so equipped) in the distributor sleeve (Fig. 44).

10. Place a new extension housing gasket on the case. Install the extension housing, vacuum tube clip (if so equipped), and the extension housing-to-case attaching bolts. Torque the bolts to specification.

11. Place the transmission in the holding fixture with the front pump mounting face of the case. **Make sure thrust washer No. 9 is still located at the bottom of the transmission (Fig. 95).**

12. Install the one-way clutch spring retainer into the outer race (Fig. 101).

13. Install the inner race inside of the spring retainer. Be sure the face with the step is installed toward the rear of the case, mating with the thrust washer.

14. Install the individual springs between the inner and outer race as shown in Fig. 101.

15. Starting at the back of the transmission case, install the one-way clutch rollers by slightly compressing each spring and positioning the roller between the spring and the spring retainer.

16. After the one-way clutch has been assembled, rotate the inner race clockwise to center the rollers and springs. Install the low and reverse drum (Fig. 95). The splines of the drum have to engage with the splines of the one-way clutch inner race. Check the one-way clutch operation

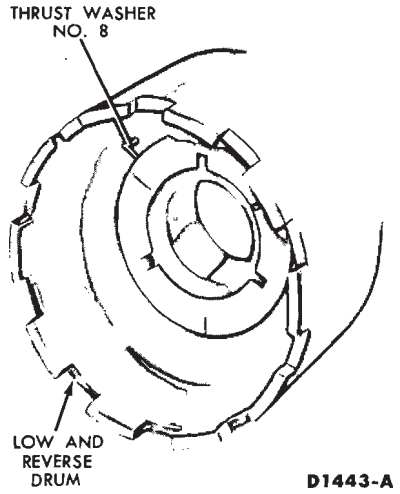


FIG. 102—Number 8 Thrust Washer Location

by rotating the low and reverse drum. The drum should rotate clockwise but should not rotate counterclockwise.

17. Install thrust washer No. 8 on top of the low and reverse drum (Fig. 102). Install the low-reverse band in the case, with the end of the band for the small strut toward the low-reverse servo (Fig. 43).

18. Install the reverse ring gear and hub on the output shaft.

19. Move the output shaft forward and install the reverse ring gear hub-to-output shaft retaining ring (Fig. 42).

20. Place thrust washers Nos. 6 and 7 on the reverse planet carrier (Fig. 103).

21. Install the planet carrier in the reverse ring gear and engage the tabs of the carrier with the slots in the low-reverse drum.

22. On the bench, install the forward clutch in the reverse-high clutch by rotating the units to mesh the reverse-high clutch plates with the splines of the forward clutch (Fig. 104).

23. Using the end play check reading that was obtained during the transmission disassembly to determine which No. 2 steel backed thrustwasher is required, proceed as follows:

a. Position the stator support vertically on the work bench and install the correct No. 2 thrustwasher or washer and spacer as required to bring the end play within specifications.

b. Install the reverse-high clutch and the forward clutch on the stator support.

c. Invert the complete unit making sure that the intermediate brake drum bushing is seated on the forward clutch mating surface.

d. Select the thickest fiber washer (No. 1) that can be inserted between the stator support and the intermediate brake drum thrust surfaces and still maintain a slight clearance. **Do not select a washer that must be forced between the stator support and intermediate brake drum.**

e. Remove the intermediate brake drum and forward clutch unit from the stator support.

f. Install the selected Nos. 1 and 2 thrustwashers on the front pump stator support (Fig. 33) using enough vaseline to hold the thrust washers in position during the front pump installation.

24. Install thrust washer No. 3 on the forward clutch (Fig. 105).

25. Install the forward clutch hub and ring in the forward clutch by rotating the units to mesh the forward clutch plates with the splines on the forward clutch hub (Fig. 106).

26. Install thrust washer No. 4 on the front planet carrier (Fig. 107). Install the front planet carrier into the forward clutch hub and ring gear. **Check the forward thrust bearing race inside the planet carrier for proper location against the thrust bearing. Make sure the race is centered for alignment with the sun gear on the input shell (Fig. 108).**

27. Install the input shell and sun gear on the gear train (Fig. 109). Rotate the input shell to engage the drive lugs of the reverse-high clutch. If the drive lugs will not engage, the

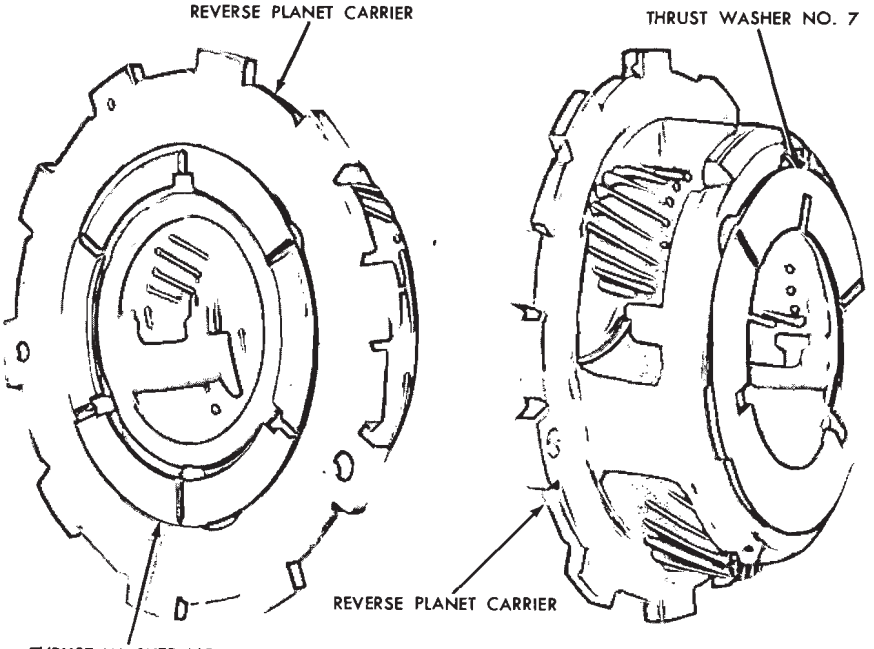


FIG. 103—Number 6 and 7 Thrust Washer Location

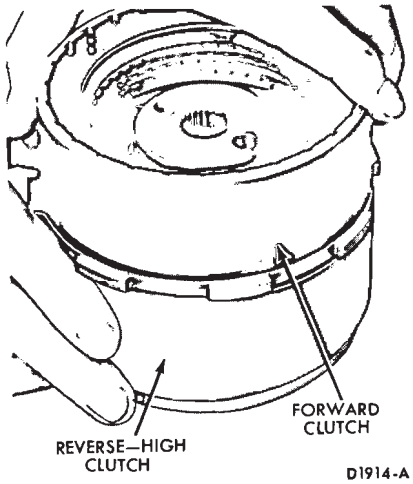


FIG. 104—Installing Clutch Units

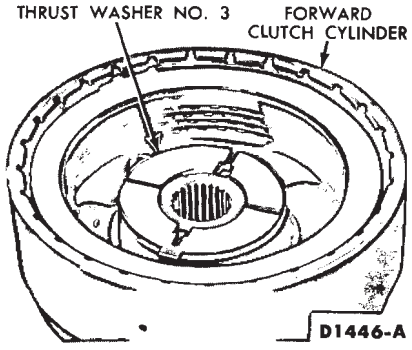


FIG. 105—Number 3 Thrust Washer Location

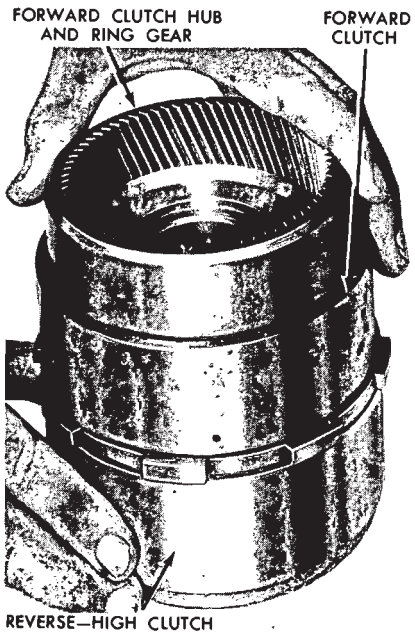


FIG. 106—Installing Forward Clutch Hub and Ring Gear

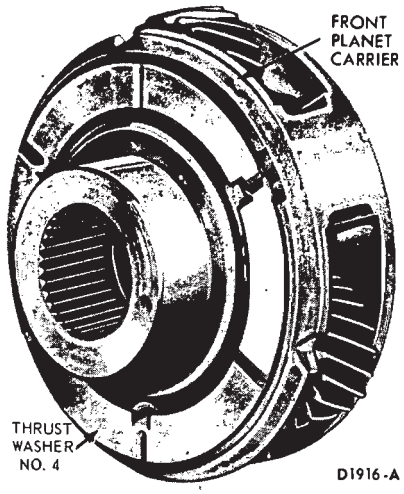


FIG. 107—Number 4 Thrust Washer Location

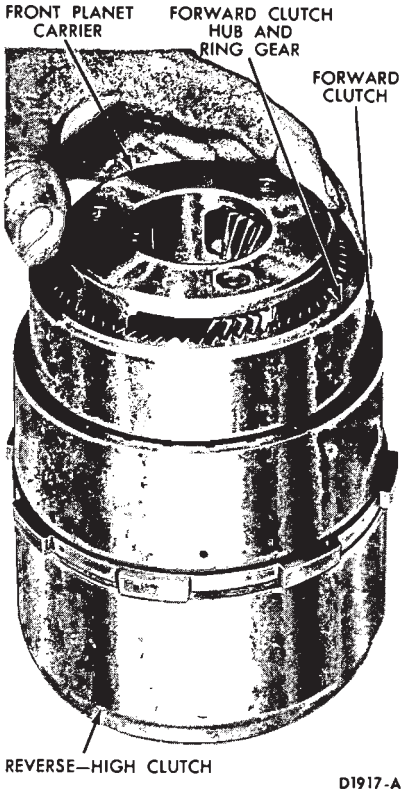


FIG. 108—Installing Front Planet Carrier

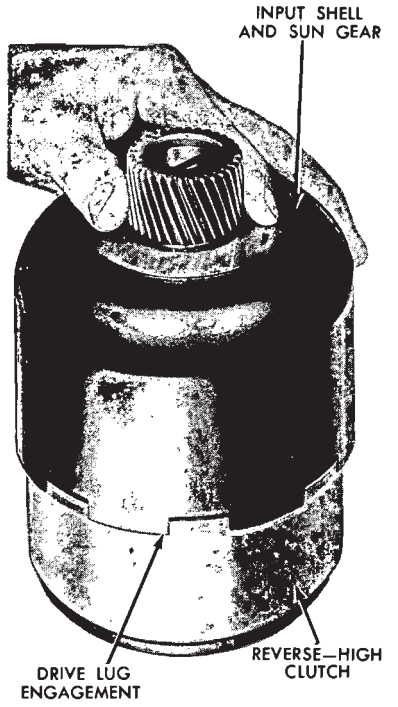


FIG. 109—Installing Input Shell and Sun Gear

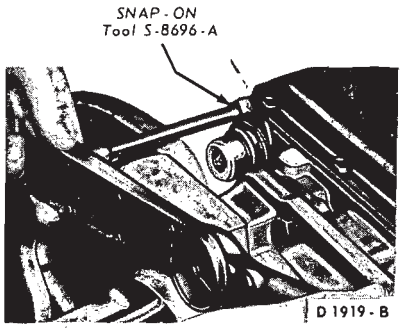


FIG. 110—Installing Vacuum Unit—C4 Automatic

outer race inside the forward planet carrier is not centered to engage the end of the sun gear inside the input shell. Center the thrust bearing race and install the input shell.

28. Hold the gear train together and install the forward part of the gear train assembly in the case (Fig. 38).

The input shell sun gear must mesh with the reverse pinion gears. The front planet carrier internal splines must mesh with the splines on the output shaft.

29. A new band should be soaked in transmission fluid for fifteen minutes before it is installed. Install the intermediate band through the front of the case (Fig. 36).

30. Install a new front pump gasket on the case. Line up the bolt holes in the gasket with the holes in the case.

31. Install the front pump stator support into the reverse-high clutch. Align the pump-to-case attaching bolt holes. Install the front pump-to-case attaching bolts and torque them to specification.

32. Install the input shaft (Fig. 34). Be sure the short splined end is installed toward the rear of the transmission. Rotate the holding fixture to place the transmission in a horizontal position. Check the transmission end play as shown in Fig. 32. If the end play is not within specification, either the wrong selective thrust washers (Fig. 33) were used, or one of the 10 thrust washers (Fig. 95) is not properly positioned.

33. Remove the dial indicator used for checking the end play and install the one front pump-to-case attaching bolt. Torque the bolt to specification.

34. Place the converter housing on the transmission case. Install the five converter housing-to-case attaching bolts. Torque the bolts to specification.

35. Install the intermediate and low-reverse band adjusting screws in the case. Install the struts for each band (Fig. 31).

36. Adjust the intermediate and low-reverse band. Refer to In-Vehicle Adjustments and Repair for band adjusting procedures.

37. Install a universal joint yoke on the output shaft. Rotate the input and output shafts in both directions to check for free rotation of the gear train.

38. Install the control valve body (Fig. 30). Refer to In-Vehicle Adjust-

ments and Repair for the control valve body installation procedures.

39. Place a new pan gasket on the case and install the pan and pan-to-case attaching bolts. Torque the attaching bolts to specification.

40. Remove the transmission from the holding fixture. Install the two extension housing-to-case attaching bolts. Torque the bolts to specification.

41. On a C4 automatic transmission, install the primary throttle valve in the transmission case (Fig. 28).

42. On a C4 automatic transmission, install the vacuum unit, gasket, and control rod in the case. Using the tools shown in Fig. 110, torque the vacuum unit to 15-23 ft-lbs.

43. Make sure the input shaft is properly installed in the front pump stator support and gear train. The short splined end of the shaft should be installed toward the rear of the transmission. Install the converter in the front pump and the converter housing.

5 SPECIFICATIONS

APPROXIMATE REFILL CAPACITIES

	U.S. Measure	Imperial Measure
C4 Transmission – Ford All Engines	10-1/4 qt.	8-1/4 qt.
Falcon, Maverick and Mustang – 170 and 200 Engines	8 qt.	6-1/2 qt.
Fairlane, Montego, and Mustang – 351 Engine	10-1/4 qt.	8-1/4 qt.
All Other Engines	9 qt.	7-1/4 qt.

CD2123-A

CONVERTER IDENTIFICATION AND STALL SPEEDS

Converter Part Number	Nominal Size	Stall Ratio	Identification No. ①	Transmission Model	Engine CID	Stall Speed
DODP-7902-A	10-1/4	2.10:1	BT	PEB-D1, PEG-A1	170-1V	1400 – 1600
				PEB-B3, C3, D1 PEG-A1	200-1V	1500 – 1720
DOAP-7902-A ②	12	2.14:1	BR	PEA-A3	240-1V	1250 – 1450
				PEA-M2, N2 PEE-V2	302-2V	1400 – 1600
DOFP-7902-A	12	2.14:1	BN	PEF-C, D, E	351-2V	1520 – 1720
DOOP-7902-A	11-1/4	2.02:1	BP	PEE-AD1, AE1, AF1	250-1V	1620 – 1820
				PEE-M1, V1, AC1, AH1	302-2V	1780 – 1980

① Converter identification is stamped on the converter cover adjacent to the converter drive stud.
② For service replacement, use converter assembly DOFP-7902-A

CD2124-A

CONTROL PRESSURE AT ZERO GOVERNOR RPM-C4 AUTOMATIC

Engine Speed	Throttle	Manifold Vac. Ins. Hg.	Range	P.S.I.
Idle	Closed	① Above 18	P. N. D. 2, 1 R	52 – 69 80 – 110 100 – 180
As Required	As Required	10	D, 2, 1	96 – 110
As Required	As Required	3.0	D, 2, 1 R	135 – 155 220 – 250

① At altitudes above sea level, it may not be possible to obtain 18 inches of engine vacuum at idle. For idle vacuums of less than 18 inches, refer to the following table to determine idle speed pressure specification in D driving range.

Engine Vacuum	Line Pressure
17 inches	52-74
16 inches	52-78
15 inches	52-84
14 inches	52-90
13 inches	52-95
12 inches	52-100
11 inches	52-106

CD2125-A

CONTROL PRESSURE – C4S SEMI-AUTOMATIC

Engine Speed	Throttle	Range	P.S.I.
Idle	Closed	P, N, HI, 2, 1	70-130
		R	70-260
1400 rpm	As required	HI, 2, 1	110-130
1400 rpm	As required	R	210-260

CD2126-A

CHECKS AND ADJUSTMENTS

Operation	Specification
Transmission End Play	0.008-0.042 inch (Selective Thrust Washers Available)
Turbine and Stator End Play	Model PEB, PEG – New or rebuilt 0.044 max. Used 0.060 max.
	Model PEE, PEA, PEF – New or rebuilt 0.023 max. Used 0.040 max.
Intermediate Band Adjustment	Remove and discard lock nut. Adjust screw to 10 ft-lbs torque, then back off 1-3/4 turns. Install new lock nut and torque to specification.
Low-Reverse Band Adjustment	Remove and discard lock nut. Adjust screw to 10 ft-lbs torque, then back off 3 turns. Install new lock nut and torque to specification.
Selective Snap Ring Thickness	0.050-0.054, 0.064-0.068, 0.078-0.082, 0.092-0.096

CD2127-A

SELECTIVE THRUST WASHERS

THRUST WASHER NO. 1		THRUST WASHER NO. 2	
Nylon Thrust Washer W/Tangs	Color Of Washer	No. Stamped On Washer	Metal Thrust Washer
0.053-0.0575	Red	1	0.041-0.043
0.070-0.074	Green	2	0.056-0.058
0.087-0.091	Natural (White)	3	0.073-0.075
0.104-0.108	Black	Spacer	0.032-0.036 ①
0.121-0.125	Yellow		

① This is a selective spacer. The spacer must be installed next to the stator support to obtain correct end play.

CD2128-A

Model	Forward Clutch			Reverse Clutch		
	External Spline (Steel-Grit Blasted)	Internal Spline (Comp.)	Free Pack Clear. (Inches)	External Spline (Steel)	Internal Spline (Comp.)	Free Pack Clear. (Inches)
PEB-PEG	3	4	0.025-0.050	3	3	0.050-0.071
PEA-PEE-PEF	4	5		4	4	

CD2129-A

CONTROL VALVE SPRING IDENTIFICATION-C4 AUTOMATIC

Spring		Total Coils	Free Length (Inches)	Spring Dia. O.D. (Inches)	Wire Dia. (Inches)	Length at Lbs Load		Spring Color Code
						Load	Length	
Manual Valve Detent		–	–	Leaf Type	–	7.25	0.542	None
2-3 Backout Valve		13	1.345	0.345	0.0258	1.45	0.620	Gray
1-2 Transition Valve:		12	1.150	0.330	0.023	0.95	0.480	Dk. Green
Throttle Downshift Valve:		10	0.816	0.280	0.0301	3.00	0.500	None
Low Servo Modulator Vavle:		12	1.270	0.380	0.0268	1.54	0.553	Orange
Throttle Pressure Booster Valve:	All except PEE-AC1, AH1,M1,V1,PEF	15	1.109	0.281	0.0332	4.50	0.620	None
	Model PEE-AC1, AH1,M1,V1,PEF	15	1.39	0.285	0.036	5.25	0.730	Purple
Throttle Pressure Limit Valve:		14	1.192	0.295	0.0379	6.25	0.770	Brown
Throttle Pressure Modulator Valve:		15	1.513	0.292	0.0286	3.575	0.620	Yellow
Line Pressure Coast Boost Valve:		10	1.023	0.340	0.0332	4.10	0.494	Dk. Blue
Drive 2 Valve:		13	0.950	0.230	0.019	1.00	0.450	Violet
Int. Servo Accumulator Valve:	Model PEE-AC1,AH1, M1,V1,AG1	9	0.680	0.300	0.0244	1.00	0.390	Orange
	Model PEA-A3, PEE-AD1,AE1,AF1, PEB,PEF	8	0.680	0.300	0.0258	1.50	0.390	Lt. Green
	Model PEA-M2,N2	9	0.845	0.300	0.258	2.00	0.390	None
Main Oil Pressure Reg., Valve Inner		11	1.40	0.407	0.0286	1.49	0.739	None
Main Oil Pressure Reg. Valve Outer		9	1.667	0.668	0.0507	7.30	0.586	Pink

CD2130-A

CONTROL VALVE SPRING IDENTIFICATION – C4S SEMI-AUTOMATIC

Spring	Total	Free Length (Inches)	Spring Dia. O.D. (Inches)	Wire Dia. (Inches)	Length at Lbs. Load	
					Length	Load
2-3 Backout Control Valve	10	1.031	0.356	0.034	0.464	4.44
Main Oil Press Reg. Valve	9	1.667	0.671	0.0507	0.586	7.30
Throttle Press Modulator	15	1.24	0.297	0.034	0.740	4.50
Drive 2 Valve	9.3	0.594	0.230	0.030	0.450	3.0
Low Servo Modulator Valve	12	1.412	0.380	0.028	0.553	1.89

CD2131-A

SHIFT SPEED ACTUAL MPH

FAIRLANE, MONTEGO, MUSTANG AND MAVERICK WITH 170-1V, 200-1V AND 250-1V ENGINES

Throttle	Range	Shift	1	2	3	4	5
Closed	D	1-2	8-10	9-10	9-10	9-10	10-11
(Above	D	2-3	9-19	10-20	10-20	10-22	11-23
18"	D	3-1	9	10	10	10	11
Vacuum)	1	2-1	28-36	28-37	29-37	30-40	32-43
To	D	1-2	25-37	26-38	26-39	27-39	30-43
Detent	D	2-3	42-56	43-62	44-63	46-63	50-67
(Torque	D	3-2	33	34	34	36	39
Demand)	D	3-1	27	28	28	30	32
Through	D	1-2	33-42	34-43	34-44	36-48	39-50
Detent	D	2-3	56-68	58-70	59-71	61-74	66-81
(W.O.T.)	D	3-2	66	68	68	74	78
	D	2-1 or 3-1	34	35	35	37	40

FAIRLANE, MONTEGO, MUSTANG

Axle Ratio	Tire Size	Use Column No.
3.25:1	7.35 x 14	1
	E70 x 14, E78 x 14	2
	7.75 x 14, F70 x 14	3
	F78 x 14, F60 x 15	
3.08:1	All	4
3.00:1	All	4
2.83:1	All	5

MAVERICK

Axle Ratio	Tire Size	Use Column No.
3.20:1	B78 x 14, C78 x 14	1
	D70 x 14	3
3.08:1	C78 x 14	2
	B78 x 14,	3
	D70 x 14	4
3.00:1	B78 x 14	3
	C78 x 14, D70 x 14	4

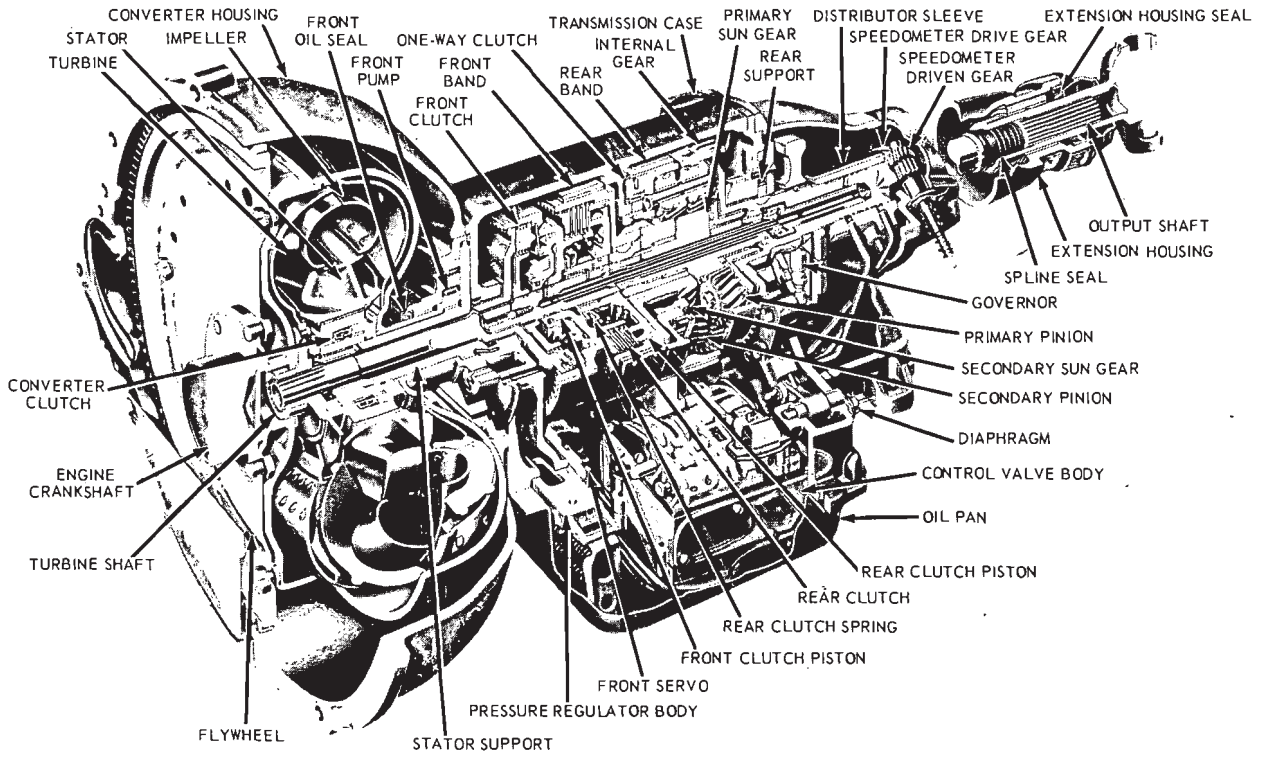
CD2132-A

PART 17-03 FMX Automatic Transmission

Applies to Ford, Meteor, Cougar, Fairlane, Montego and Mustang Only

Applies to Ford, Meteor, Cougar, Fairlane, Montego and Mustang Only			
COMPONENT INDEX	Models Listed Above	COMPONENT INDEX	Models Listed Above
REAR SUPPORT Assembly	03-29	TRANSMISSION (Complete) Removal and Installation	03-15
Inspection	01-15	TRANSMISSION CASE BUSHING Parts Repair or Replacement	03-27
REAR SUPPORT BUSHING Disassembly and Overhaul	03-22	TRANSMISSION CASE LINKAGE Parts Repair or Replacement	03-26
SELECTOR LEVER-CONSOLE SHIFT Removal and Installation	03-09	VACUUM DIAPHRAGM UNIT Assembly	03-30
THROTTLE LINKAGE Adjustment	03-05	Adjustment	01-09
Parts Repair or Replacement	03-26	Checking	01-06

1 DESCRIPTION



D 2045-A

FIG. 1—FMX Transmission—Typical

DESCRIPTION

Figure 1 shows the location of the converter, front pump, clutches, bands, gear train and most of the internal parts used in the FMX Transmission.

The identification tag (Fig. 2) on the FMX transmission is attached under the lower right hand extension-to-case bolt. The tag includes the model prefix and suffix, assembly part number and the build date code. The first line on the tag shows the transmission model prefix and suffix. A number appearing after the suffix (Fig. 2) indicates that the internal parts in the transmission have been changed after initial production start-up. For example, a PHA-F model transmission that has been changed internally would read PHA-F1. Both transmissions are basically the same, but some service parts in the PHA-F1 transmission are slightly different than the PHA-F transmission. Therefore, it is important that the codes on the transmission identification tag be checked when ordering parts or making inquiries about the transmission.

The tag must be kept with the individual transmission it was origi-

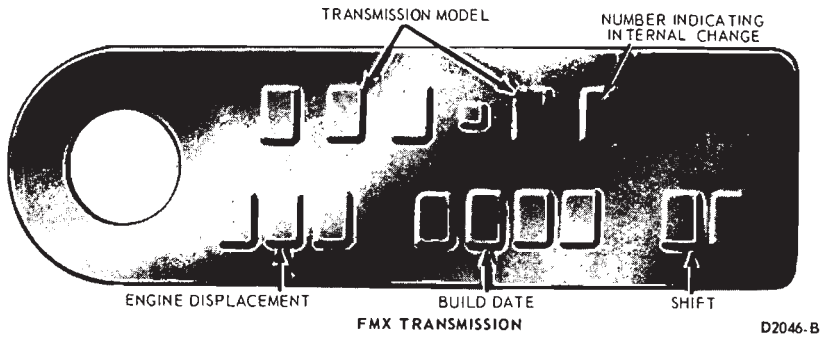


FIG. 2—Identification Tag

nally installed on. If the tag was removed during disassembly, reinstall it on the same unit.

The FMX transmission is a three speed unit capable of providing automatic upshifts and downshifts through the three forward gear ratios, and also capable of providing manual selection of first and second gears.

The transmission consists essentially of a torque converter, planetary gear train, two multiple disc clutches and a hydraulic control system (Fig. 3).

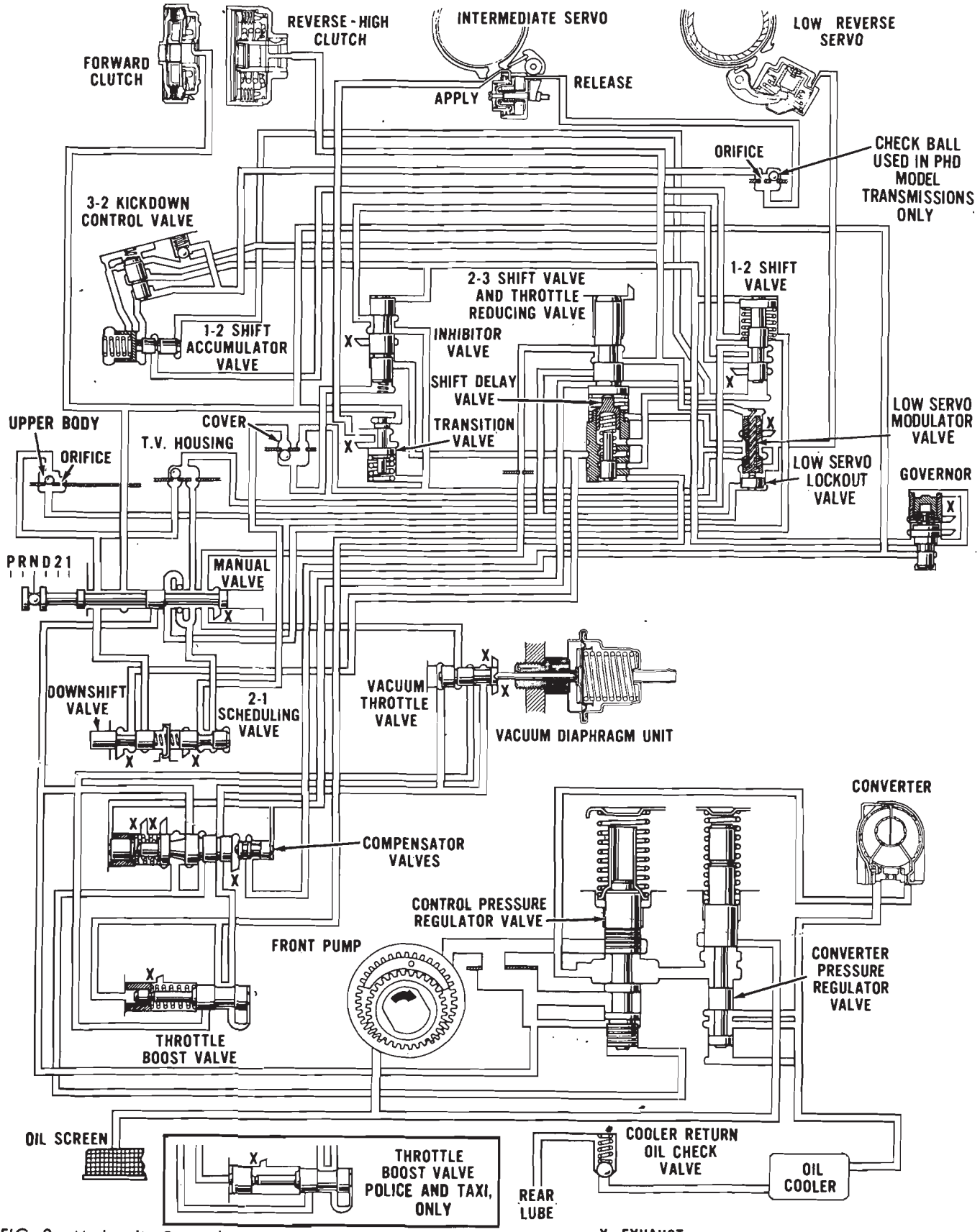


FIG. 3—Hydraulic Control System—FMX Transmission

2 IN-VEHICLE ADJUSTMENTS AND REPAIRS

CONTROL LINKAGE ADJUSTMENTS

The transmission control linkage adjustments should be performed in the order in which they appear in this section of the manual.

THROTTLE AND DOWNSHIFT LINKAGE ADJUSTMENTS

Adjusting the throttle linkage is important to be certain the throttle and downshift systems are properly adjusted. The downshift system should come in when the accelerator is pressed through detent, and not before detent. Refer to Group 23 for detailed throttle and downshift linkage adjustment procedures.

MANUAL LINKAGE ADJUSTMENT

COLUMN SHIFT

1. Place the selector lever in the D position tight against the stop.
2. Loosen the shift rod adjusting nut at point A (Fig. 4 or 5).
3. Shift the manual lever at the transmission into the D detent position, third from the rear.
4. Make sure that the selector lever has not moved from the D stop, then tighten the nut at point A to 10-20 ft-lbs.
5. Check the pointer alignment and the transmission operation for all selector lever detent positions.

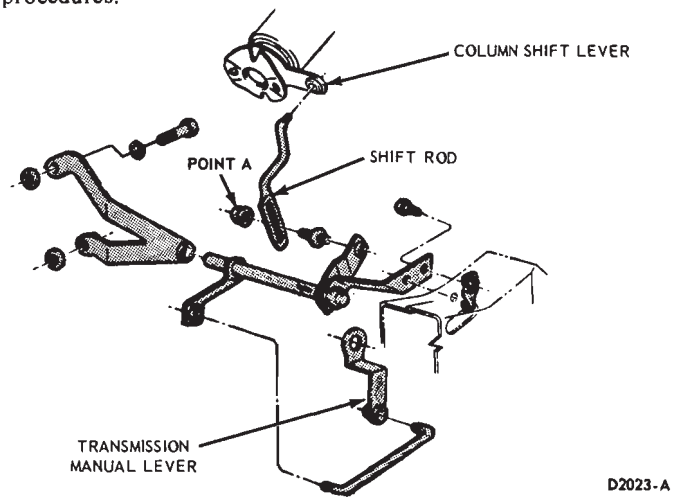


FIG. 4—Manual Linkage—Column Shift—Ford-Meteor

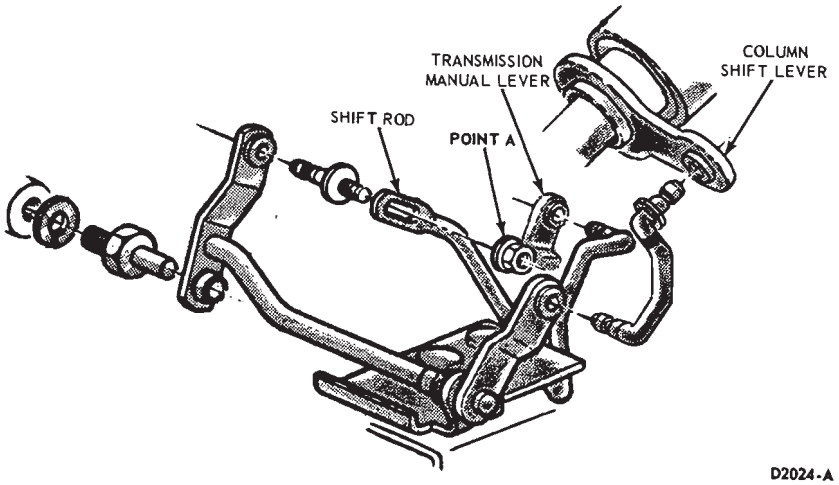


FIG. 5—Manual Linkage—Column Shift—Fairlane-Montego

CONSOLE SHIFT

1. Position the transmission selector lever in D position.
2. Raise the vehicle and loosen the manual lever shift rod retaining nut (Fig. 6, 7 or 8). Move the transmission manual lever to the D position, third detent position from the back of the transmission.
3. With the transmission selector lever and manual lever in the D positions, torque the attaching nut 10 to 20 ft-lbs.
4. Check the operation of the transmission in each selector lever position.

LOCK ROD ADJUSTMENT(CONSOLE OR FLOOR SHIFT VEHICLES ONLY)

Before attempting to adjust the lock rod, be sure that the transmission manual linkage is properly adjusted.

1. Raise the vehicle and loosen the lock rod retaining nut (Fig. 6, 7 or 8).
2. Lower the vehicle and place the selector lever in the D position tight against the D stop.
3. Align the hole in the steering column socket casting with the column alignment mark and insert a 0.180 diameter gauge pin (No. 15 drill). The column casting must not rotate with the gauge pin in position.
4. Raise the vehicle and torque the lock rod retaining nut to 10-20 ft-lbs.
5. Lower the vehicle. Remove the gauge pin and check the linkage for proper operation.

NEUTRAL START SWITCH ADJUSTMENT CONSOLE SHIFT

FORD-METEOR

1. With the manual linkage properly adjusted, check the starter engagement circuit in all positions. The circuit must be open in all drive positions and closed only in park and neutral.
2. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.
3. Remove two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the

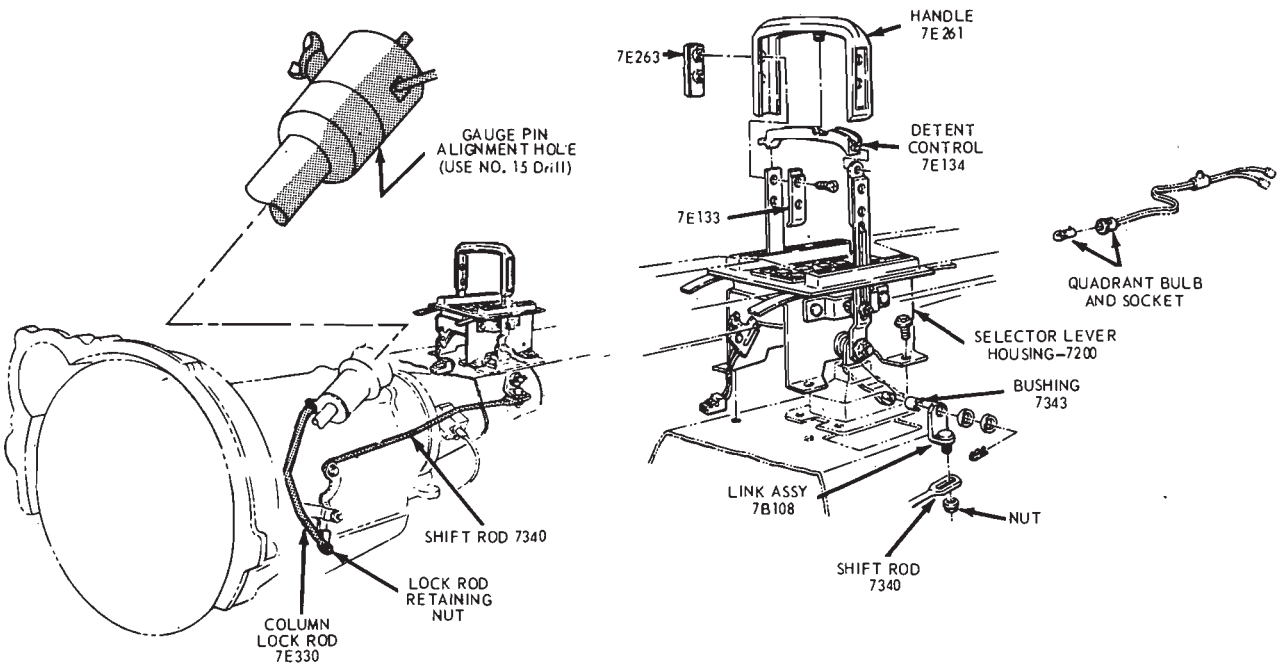


FIG. 6—Manual Linkage—Console or Floor Shift—Ford-Meteor

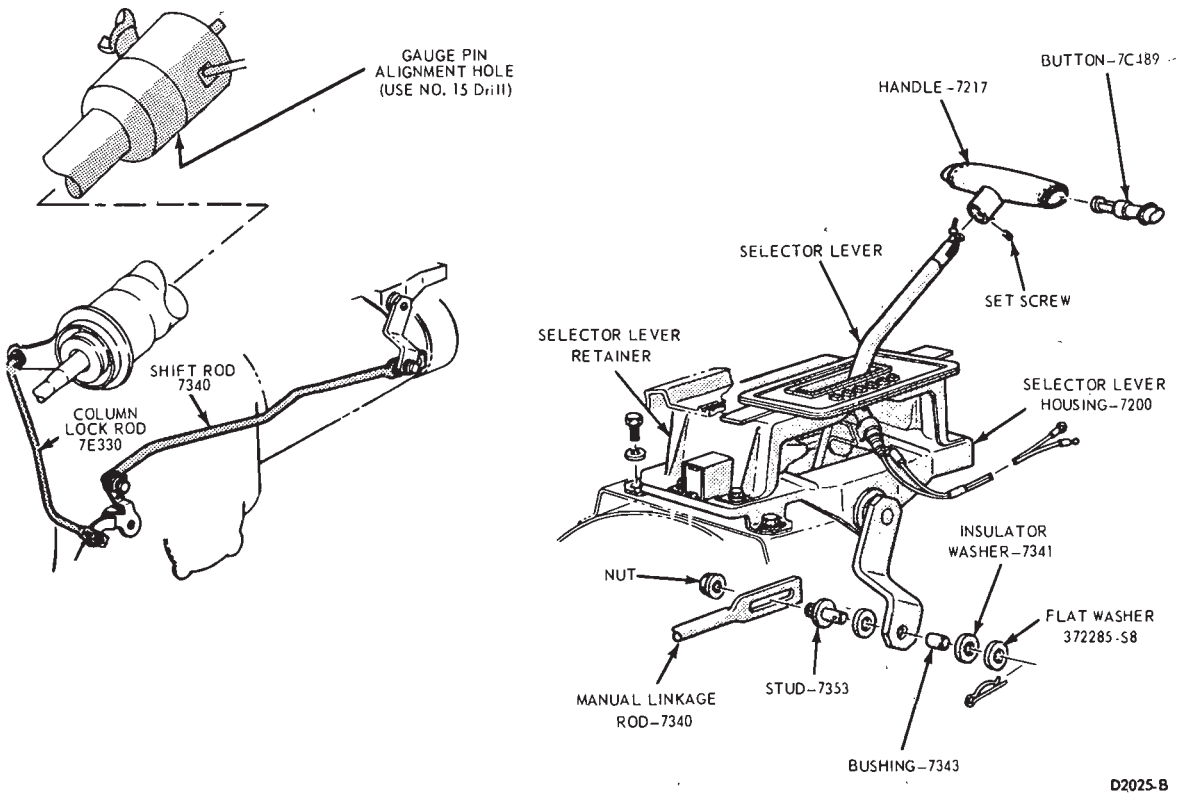


FIG. 7—Manual Linkage—Console or Floor Shift—Fairlane-Montego

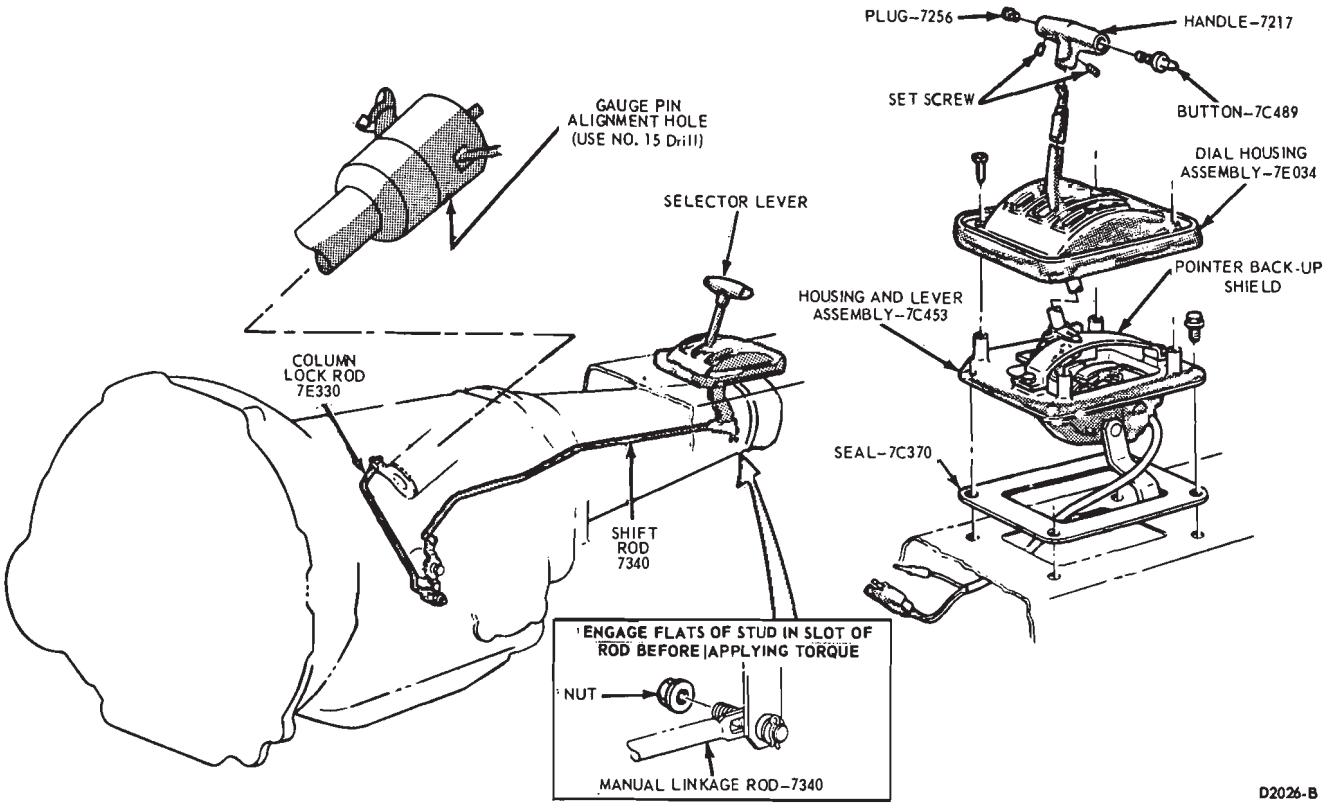


FIG. 8—Manual Linkage—Console or Floor Shift—Mustang-Cougar

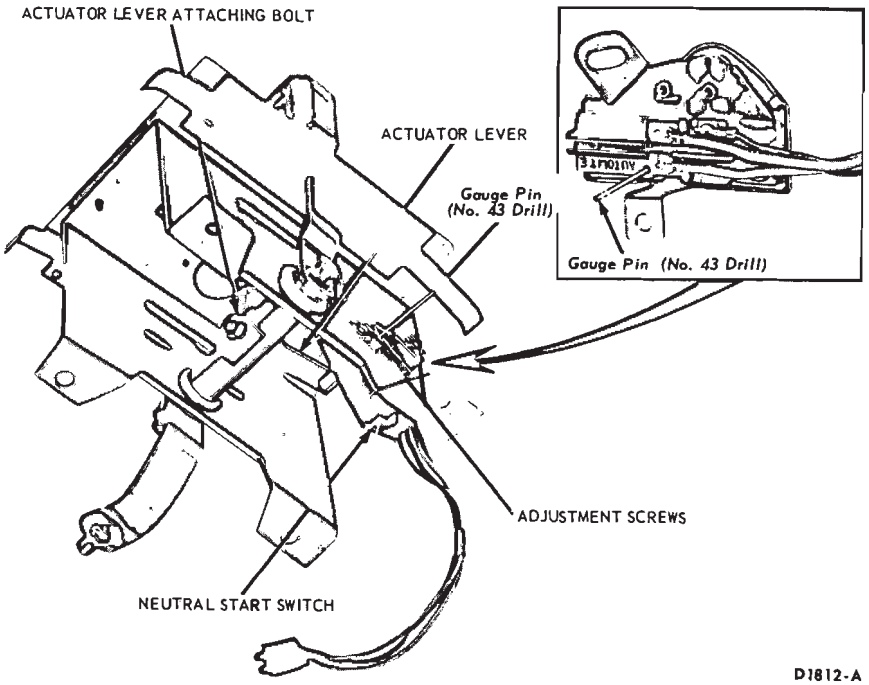


FIG. 9—Neutral Start Switch Adjustments—Console Shift—Ford-Meteor

panel.

4. Loosen the two combination starter neutral and back-up light switch attaching screws (Fig. 9).

5. Move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 9).

6. Place the transmission selector lever firmly against the stop of the neutral detent position.

7. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch lever contacts and selector lever actuator. If an adjustment can not be made by rotating the switch, loosen the actuator lever attaching bolt and adjust the lever (Fig. 9).

8. Tighten the neutral start switch attaching screws. If the actuator lever was adjusted, tighten the actuator lever bolt to 6-10 ft-lbs.

9. Turn the ignition key to the ACC position and place the selector lever in the reverse position and check the operation of the back-up lights. Turn the key off.

10. Place the console top panel on the console and install the retaining screws.

11. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE-MONTEGO

1. With the manual linkage properly adjusted, check the starter engagement circuit in all positions. The circuit must be open in all drive positions and closed only in park and neutral.

2. Remove the selector lever handle from the lever.

3. Remove the trim panel from the top of the console.

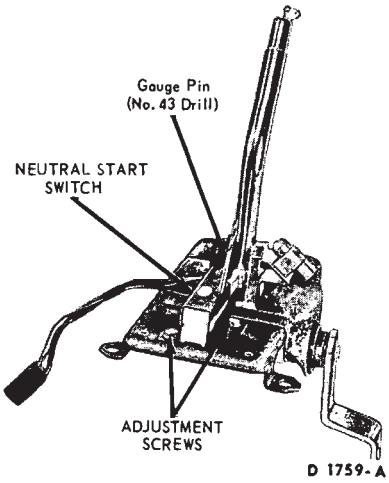


FIG. 10—Neutral Start Switch—Console Shift—Fairlane-Montego

4. Remove the cover and dial indicator as an assembly.

5. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.

6. Loosen the two combination starter neutral and back-up light switch attaching screws (Fig. 10).

7. Move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 10).

8. Place the transmission selector lever firmly against the stop of the neutral detent position.

9. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch actuating lever contacts the selector lever.

10. Tighten the switch attaching screws and remove the gauge pin. Check for starting in the park position.

11. Turn the ignition key to the ACC position and place the selector lever in the reverse position and check the operation of the back-up lights. Turn the key off.

12. Position the selector lever retainer to the selector lever housing. Install the four attaching screws.

13. Install the cover and dial indicator.

14. Install the trim panel on the top of the console. Install the selector lever handle.

MUSTANG-COUGAR

1. With the manual linkage properly adjusted and the engine turned off, place the selector lever in the N (Neutral) position. Then, shift the selector lever from neutral to 1, to P (park) and back to neutral. Shifting the selector lever through this shift pattern should adjust the switch automatically. If not, adjust it manually as follows:

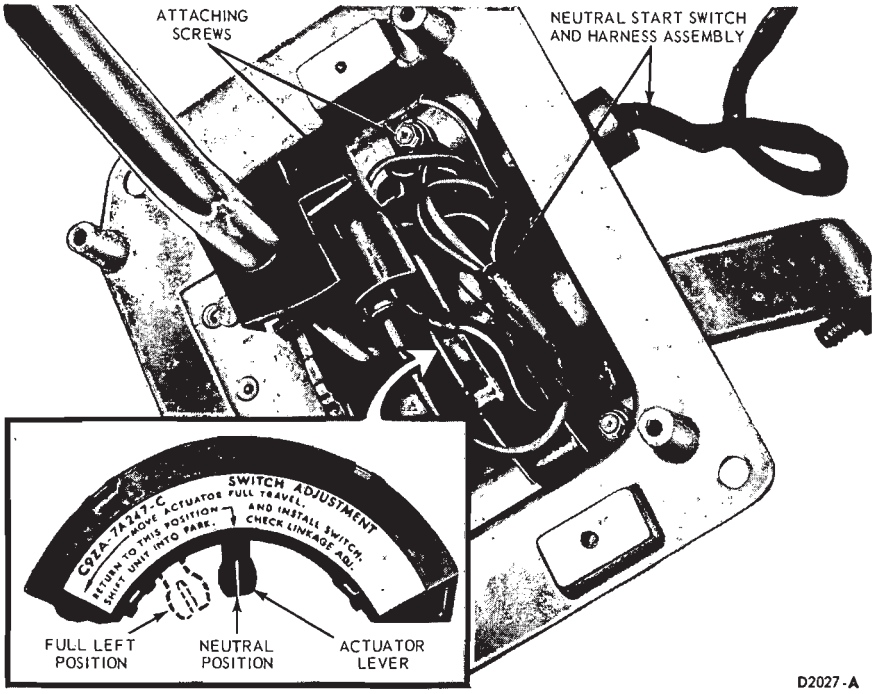


FIG. 11—Neutral Start Switch—Console Shift—Mustang-Cougar

2. With the selector lever in neutral, remove the selector lever handle attaching screw and remove the handle (Fig. 8).

3. Remove the dial housing attaching screws and remove the housing.

4. Remove the two pointer back-up shield attaching screws and remove the shield.

5. Remove the two screws securing the neutral start switch to the selector lever housing.

6. Lift the switch from the housing and move the actuator lever all the way to the left. Then, return the actuator lever to the neutral position as shown in Figure 11.

7. Position the neutral switch assembly to the selector lever housing, and secure with the two attaching screws.

8. Place the selector lever in the P (Park) position and check the operation of the switch. The engine should start with the selector lever in the park position. If the engine does not start, replace the switch. Refer to the Neutral Start Switch - Replacement procedures in this section.

9. Install the pointer back-up shield on the housing and lever assembly.

10. Install the dial housing on the selector lever housing assembly.

11. Install the selector lever handle.

NEUTRAL START SWITCH REMOVAL AND INSTALLATION—CONSOLE SHIFT

FORD-METEOR

1. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.

2. Remove the two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the panel.

3. Remove the two screws securing the dial indicator assembly to the selector lever housing and remove the indicator assembly.

4. Disconnect the neutral start switch wires at the plug connector. Remove the wires from under the retaining clip.

5. Remove the two screws securing the neutral start switch to the selector lever housing and remove the switch (Fig. 9).

6. Position the neutral start switch to the selector lever housing and install the two attaching screws.

7. Adjust the neutral start switch as outlined under the Neutral Start Switch Adjustment procedures in this section.

8. Connect the neutral start switch

wires to the plug connector. Position the wires in the retaining clip and close the clip.

9. Place the console top panel on the console and install the retaining screws.

10. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE-MONTEGO

1. Remove the selector lever handle from the lever.

2. Remove the trim panel from the top of the console.

3. Remove the cover and dial indicator as an assembly.

4. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.

5. Remove the two screws securing the neutral start switch to the selector lever housing. Disconnect the neutral start switch wires at the plug connector and remove the switch.

6. Position the neutral start switch to the selector lever housing and install the two attaching screws.

7. With the selector lever in neutral, move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 10).

8. Place the transmission selector lever firmly against the stop of the neutral detent position.

9. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch actuating lever contacts the selector lever.

10. Tighten the switch attaching screws and remove the gauge pin.

11. Connect the neutral start switch wires to the plug connector and check for starting in the park position.

12. Position the selector lever retainer to the selector lever housing. Install the attaching screws.

13. Install the cover and dial indicator.

14. Install the trim panel on the top of the console. Install the selector lever handle.

MUSTANG-COUGAR

1. Place the transmission selector lever in the N (Neutral) position.

2. Raise the vehicle and remove the manual lever control rod attaching nut (Fig. 8).

3. Lower the vehicle and remove the selector lever handle attaching screw and the handle.

4. Remove the dial housing attaching screws and the housing.

5. Disconnect the dial indicator light.

6. Disconnect the neutral start switch and dial indicator light wires from their connectors at the dash panel.

7. Remove the four selector housing and lever assembly attaching bolts. Remove the selector lever and housing assembly.

8. Remove the two pointer back-up shield attaching screws and remove the shield.

9. Remove the two screws securing the neutral start switch to the selector lever housing. Push the neutral start switch harness plug inward and remove the switch and harness assembly (Fig. 11).

10. Before installing the new switch, hold it with the wires facing downward and move the actuator lever all the way to the left. Then, return the actuator lever to the neutral position as shown in Figure 11.

11. Position the harness and neutral switch assembly in the selector lever housing. Secure with the two attaching screws.

12. Install the pointer back-up shield on the housing and lever assembly.

13. Position the selector lever and housing assembly on the console and install the attaching bolts.

14. Connect the dial indicator light.

15. Connect the neutral start switch and dial indicator light wires to their respective connectors at the dash panel.

16. Install the dial housing on the selector lever housing assembly.

17. Install the selector lever handle.

18. Raise the vehicle and secure the manual lever control rod to the selector lever arm.

19. Lower the vehicle.

20. Place the selector lever in the park position and check the operation of the switch.

SELECTOR LEVER—REMOVAL AND INSTALLATION—CONSOLE SHIFT

FORD-METEOR

1. Raise the vehicle and disconnect the link assembly from the selector lever arm (Fig. 6).

2. Lower the vehicle. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.

3. Remove the two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the panel.

4. Disconnect the neutral start switch wires at the plug connector. Disconnect the bulb socket from the quadrant.

5. Remove the four bolts that attach the selector lever housing to the floor pan and remove the selector lever and housing.

6. Position the new selector lever and housing assembly on the floor pan and install the attaching bolts.

7. Connect the bulb socket to the quadrant and the neutral start switch wires to the plug connector.

8. Raise the vehicle and secure the link assembly to the selector lever arm with the bushing, insulator, flat washer and cotter pin (Fig. 6). Lower the vehicle.

9. Place the console top panel on the console and install the retaining screws.

10. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE-MONTEGO

1. Raise the vehicle on a hoist or jack stands.

2. Remove the retainer that secures the manual linkage rod to the lower end of the manual lever (Fig. 7).

3. Remove the flat washer and two insulator washers and disconnect the rod from the arm.

4. Working from inside of the vehicle, remove the selector lever handle attaching screw. Lift the handle off the selector lever.

5. Remove the console trim panel from the top of the console. Remove the console retaining screws and remove the console.

6. Remove the cover and dial indicator as an assembly.

7. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.

8. Disconnect the neutral start switch wires at the plug connector. Disconnect the bulb socket from the selector lever housing.

9. Remove the three bolts that secure the selector lever control housing to the console. Lift the selector lever housing from the console.

10. Remove the selector lever to

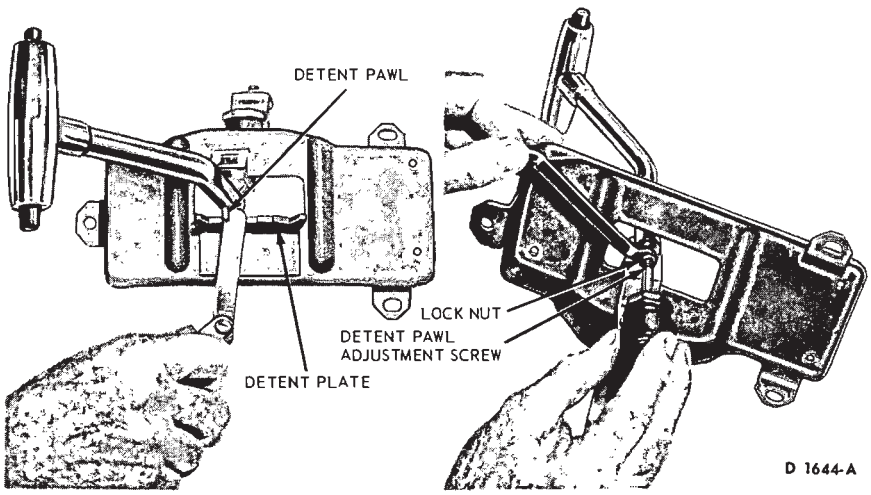


FIG. 12—Typical Selector Lever Detent Pawl Adjustment

housing attaching nut. Remove the lever from the housing.

11. Install the selector lever in the housing and install the attaching nut. Torque the nut to 20 to 25 ft-lbs.

12. Install the selector lever handle.

13. Position the selector lever as shown in Figure 12. With a feeler gauge, check the clearance between the detent pawl and plate. The clearance should be 0.005 to 0.010 inch. If necessary adjust the height of the detent pawl as shown in Figure 12.

14. Remove the handle from the selector lever.

15. Position the selector lever housing in the console and install the three attaching bolts. Do not tighten the attaching bolts at this time.

16. Connect the bulb socket to the selector lever housing and the neutral start switch wires to the plug connector.

17. Position the selector lever retainer to the selector lever housing. Install the four attaching screws.

18. Install the cover and dial indicator.

19. Place the console in position and install the retaining bolts. Tighten the selector lever housing attaching bolts.

20. Position the console trim panel and secure it with the attaching screws.

21. Install the handle and the button on the selector lever. Secure the handle with the set screw.

22. Secure the manual linkage rod to the arm with two insulating washers, a flat washer and a retainer (Fig. 7).

23. Adjust the linkage as required. Lower the vehicle.

MUSTANG-COUGAR

1. Raise the vehicle and remove the manual lever control rod attaching nut (Fig. 8).

2. Lower the vehicle, remove the selector lever handle attaching screw.

3. Remove the dial housing attaching screws and the housing.

4. Remove the pointer back-up shield attaching screws and the shield.

5. Disconnect the dial indicator light.

6. Disconnect the neutral start switch and dial indicator light wires from their connectors at the dash panel.

7. Remove the selector housing and lever assembly attaching bolts. Remove the selector lever and housing.

8. Remove the selector lever to housing attaching nut. Remove the lever from the housing.

9. Install the selector lever in the housing and install the attaching nut. Torque the nut to 20 to 25 ft-lbs.

10. Install the selector lever handle.

11. Position the selector lever as shown in Figure 12. With a feeler gauge check the clearance between the detent pawl and plate. The clearance should be 0.005 to 0.010 inch. If necessary, adjust the height of the detent pawl as shown in Figure 12.

12. Remove the handle from the selector lever.

13. Install the selector housing and lever assembly as shown in Figure 8. Torque the attaching bolts 4-6 ft-lbs.

14. Connect the dial indicator light.

15. Connect the neutral start switch and dial indicator light wires to their respective connectors at the dash panel.

16. Install the pointer back-up shield and tighten the attaching screws.

17. Install the selector lever handle and tighten the attaching screw.

18. Position the selector lever in the D position.

19. Raise the vehicle. Install the transmission manual lever rod to the selector lever. Adjust the manual linkage.

20. Lower the vehicle and check the transmission operation in each selector lever detent position.

BAND ADJUSTMENTS

FRONT BAND ADJUSTMENT

1. Drain the fluid from the transmission by loosening the pan attaching bolts starting at the rear of the pan and working toward the front. When most of the fluid has drained from the pan, remove the remainder of the attaching bolts. Use a clean drain can equipped with a 100-mesh screen if the fluid is to be reused.

2. Remove the pan, then remove the fluid filter and clip from the transmission. Clean the inside of the pan. Remove all gasket material from the pan and pan mounting face of the case.

3. Loosen the front servo adjusting screw lock nut.

4. Pull back on the actuating rod, and insert the 1/4 inch spacer between the adjusting screw and servo piston stem (Fig. 13). Tighten the adjusting screw to 10 in-lbs. torque. Remove the spacer and tighten the adjusting screw an additional 3/4 turn. Hold the adjusting screw stationary and tighten the lock nut securely.

5. Install the transmission fluid screen and clip. Install the pan using a new gasket.

6. Refill the transmission to the FULL mark on the dipstick

7. Start the engine and engage the transmission in each drive range to fill all fluid passages, then place the selector lever in the P position. Check the fluid level and add enough fluid to bring the level above the ADD mark on the dipstick.

ALTERNATE FRONT BAND ADJUSTMENT

1. Drain the fluid from the transmission. **If the same fluid is to be used again in the transmission after the band adjustment, filter the fluid through a 100-mesh screen as it**

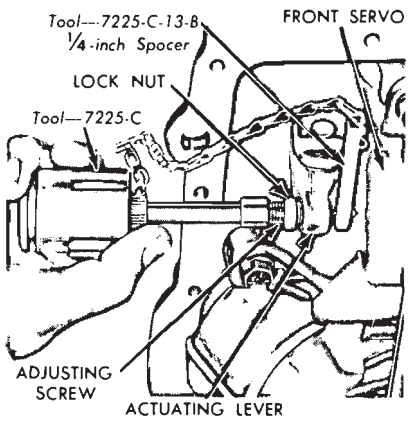


FIG. 13—Adjusting Front Band—Typical

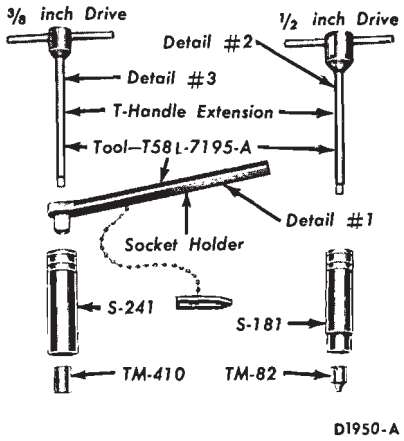


FIG. 14—Front Band Adjusting Tools

drains from the transmission. Re-use the fluid only if it is in good condition.

2. Remove and thoroughly clean the pan and screen. Discard the pan gasket.

3. Loosen the front servo adjusting screw locknut two full turns with a 9/16-inch wrench. Check the adjusting screw for free rotation in the actuating lever after the lock nut is loosened, and free the screw if necessary.

4. Pull the adjusting screw end of the actuating lever away from the servo body, and insert the 1/4 inch spacer (Fig. 14) between the servo piston stem and the adjusting screw.

5. Install the socket handle on the 9/16-inch socket.

6. Insert the T-handle extension through the socket handle and socket, and install the screwdriver socket on the T-handle extension.

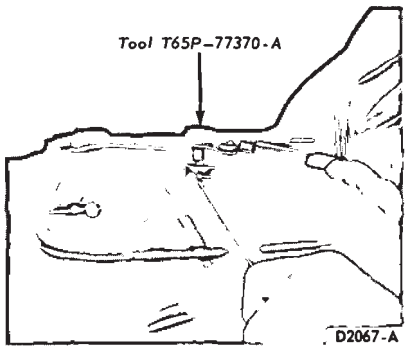


FIG. 15—Adjusting Rear Band—Ford, Meteor, Fairlane and Montego

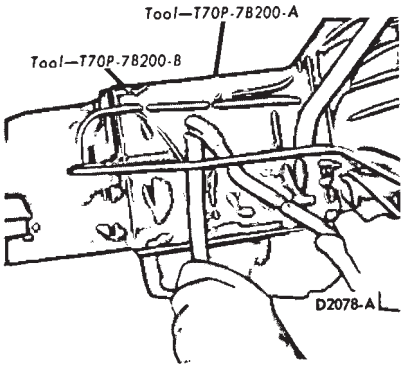


FIG. 16—Adjusting Rear Band—Mustang-Cougar

7. Place the tool on the adjusting screw so that the screwdriver socket engages the screw and the 9/16-inch socket engages the lock nut.

8. With a torque wrench on the T-handle extension, tighten the adjusting screw to 10 in-lbs torque.

9. Remove the spacer and tighten the adjusting screw an additional 3/4 turn. Hold the adjusting screw stationary, and torque the lock nut to specification.

10. Place a new gasket on the pan, and install the screen and pan on the transmission.

11. Fill the transmission with fluid.

REAR BAND ADJUSTMENT

1. Remove all dirt from the adjusting screw threads, then oil the threads.

2. Loosen the reverse band adjusting screw lock nut. On Mustang and Cougar, use the tool shown in Figure 16 to loosen the nut. Using the torque wrench shown in Figure 15 or 16, tighten the adjusting screw until the tool handle clicks. The tool is a preset torque wrench which clicks and breaks when the torque on the adjusting screw reaches 10 ft-lbs.

3. If the screw is found to be tighter than wrench capacity (10 ft-lbs torque), loosen the screw and tighten until the wrench clicks and breaks.

4. Back off the adjusting screw 1 1/2 turns. Hold the adjusting screw stationary and tighten the adjusting screw lock nut to specification. **Severe damage may result if the adjusting screw is not backed off exactly 1 1/2 turns.**

EXTENSION HOUSING AND GOVERNOR REMOVAL AND INSTALLATION

1. Raise the vehicle so that the transmission extension housing is accessible.

2. Drain the fluid from the transmission.

3. Disconnect the drive shaft from the rear axle and slide the front yoke out of the extension housing.

4. Disconnect the speedometer cable from the extension housing.

5. Remove the two nuts that secure the engine rear support to the crossmember.

6. Position a transmission jack under the transmission and raise it just enough to remove the weight from the crossmember.

7. Remove the crossmember to frame side rail bolts and nuts and position the crossmember out of the way.

8. Remove the two rear support to extension housing attaching bolts and remove the support.

9. Remove the extension housing attaching bolts. Slide the housing off the output shaft and remove the gasket. Remove the governor to counterweight attaching screws. Lift the governor from the counterweight (Fig. 17). **When removing the extension housing and/or governor, hold the output shaft and rear support from moving rearward to prevent the needle bearing and race from dropping out of location.**

10. Lubricate the governor valve parts with clean transmission fluid. **Make certain that the valve moves freely in the valve body bore.**

11. Position the governor valve body on the counterweight with the cover facing toward the front of the vehicle. Install and tighten the two attaching screws to the specified torque.

12. Position a new extension housing gasket on the rear of the transmission case.

13. Slide the extension housing into place and secure it to the transmission case with the attaching bolts.

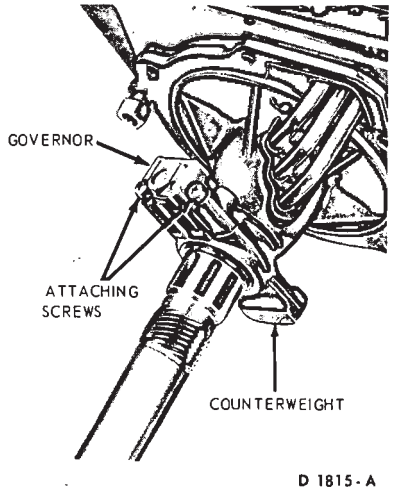


FIG. 17—Governor Installed

Torque the bolts to specification. **With the extension housing installed, rotate the output shaft. The shaft must rotate freely by hand. If the shaft is tight or bound up, it is likely that the needle bearing and race have dropped out of location, in which case, the transmission must be partially disassembled and the bearing and race repositioned.**

14. Connect the speecometer cable to the extension housing.

15. Position the engine rear support to the extension housing and secure with the two attaching bolts.

16. Raise the transmission high enough with a jack to position the crossmember to the rear support and frame side rails. Secure the support to the crossmember with the two attaching nuts. Secure the crossmember to the frame side rails.

17. Lower the transmission and remove the jack.

18. Install the driveshaft.

19. Fill the transmission to the correct level with the specified fluid.

OIL PAN AND CONTROL VALVE BODY REMOVAL AND INSTALLATION

1. Raise the vehicle so that the transmission fluid pan is accessible.

2. Drain the fluid from the transmission by loosening the pan attaching bolts starting at the rear of the pan and working toward the front. When most of the fluid has drained from the pan, remove the remainder of the attaching bolts. Remove the pan and gasket. Discard the gasket. **If the same fluid is to be used again in the transmission, filter the fluid through a 100-mesh screen before installing it in the transmission. Reuse the fluid only if it is in good condition.**

3. Disconnect the hose from the vacuum diaphragm unit. Remove the diaphragm unit using Snap-On tool S8696-A. **Do not use any tools on the diaphragm housing, such as pliers, pipe wrenches, etc. Do not allow solvents to enter the diaphragm unit.** Remove the push rod. Remove the fluid screen retaining clip and the screen.

4. Remove the fluid filter retaining clip and the filter.

5. Remove the small compensator pressure tube (Fig. 18).

6. Remove the main pressure oil tube by gently prying up the end that connects to the main control valve assembly first. Then, remove the other end of the tube from the pressure regulator. **Be sure to remove the tube in this manner. Failure to do so, could kink or bend the tube causing excessive transmission internal leakage.**

7. Loosen the front servo attaching bolts three turns.

8. Remove the three control valve body attaching bolts, and lower the valve body while pulling it off the front servo tubes. **Be careful not to damage the valve body or the tubes.**

9. Before installing the control valve body, check for a bent manual valve by rolling it on a flat surface.

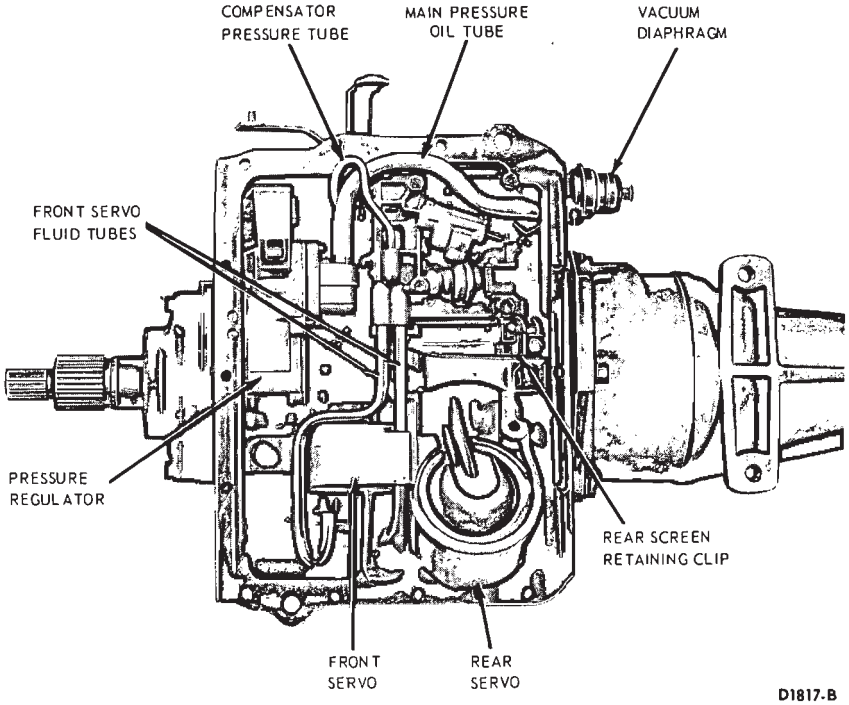


FIG. 18—Typical Hydraulic Control System

10. Install the control valve body by aligning the front servo tubes with the holes in the valve body. Shift the manual lever to the 1 detent, and place the inner downshift lever between the downshift lever stop and the downshift valve. **The manual valve must engage the actuating pin in the manual detent lever.**

11. Install but do not tighten, the control valve body attaching bolts.

12. Move the control valve body toward the center of the case until the clearance is less than 0.050 inch, between the manual valve and the actuating pin on the manual detent lever.

13. Torque the attaching bolts to specification. Be sure that the rear fluid filter retaining clip is installed under the valve body bolt as shown in Figure 18.

14. Install the main pressure oil tube. **Be sure to install the end of the tube that connects to the pressure regulator first. Then, install the other end of the tube into the main control valve assembly by tapping it gently with a soft hammer.**

15. Install the compensator pressure tube to the pressure regulator and the control valve body.

16. Turn the manual valve one full turn in each manual lever detent

position. If the manual valve binds against the actuating pin in any detent position, loosen the valve body attaching bolts and move the body away from the center of the case. Move the valve body only enough to relieve the binding. Torque the attaching bolts and recheck the manual valve for binding.

17. Position the push rod in the bore of the vacuum diaphragm unit. Using the diaphragm unit as a guide, insert the push rod into the threaded opening of the case. Torque the diaphragm unit to specification. Connect the vacuum hose.

18. Torque the front servo attaching bolts to specification.

19. Adjust the front band.

20. Install the fluid filter and the filter retaining clip.

21. Position a new fluid pan gasket on the bottom of the transmission case, and install the pan. Torque the pan screws to specification.

22. Adjust the rear band.

23. Fill the transmission with fluid. **If the fluid that was drained from the transmission is to be used again, filter the fluid through a 100-mesh screen as it is poured back into the transmission. Re-use the fluid only if it is in good condition.**

24. If the control valve body was replaced, adjust the transmission control linkage.

PRESSURE REGULATOR REMOVAL AND INSTALLATION

1. Drain the fluid from the transmission, and remove the pan and fluid filter.

2. Remove the small compensator pressure tube from the control valve body and the pressure regulator (Fig. 18).

3. Remove the main pressure oil tube by gently prying up the end that connects to the main control valve assembly first. Then remove the other end of the tube from the pressure regulator (Fig. 18). **Be sure to remove the tube in this manner. Failure to do so, could kink or bend the tube causing excessive transmission internal leakage.**

4. Remove the pressure regulator spring retainer, springs, and spacer. **Maintain pressure on the retainer to prevent the springs from flying out.**

5. Remove the pressure regulator attaching bolts and washers, and remove the regulator.

6. Position the replacement regulator body on the transmission case and install the two attaching bolts. Torque the bolts to specification.

7. Check the converter pressure and control pressure valves to be sure the valves operate freely in the bores.

8. Install the valve springs, spacer, and retainer.

9. Install the main pressure oil tube. **Be sure to install the end of the tube that connects to the pressure regulator assembly first. Then, install the other end of the tube into the main control assembly by tapping it gently with a soft hammer.**

10. Install the small compensator pressure tube.

11. Install the fluid filter and the pan, and fill the transmission to the correct level with the specified fluid.

FRONT SERVO REMOVAL AND INSTALLATION

1. Drain the fluid from the transmission, and remove the pan and fluid filter.

2. Remove the vacuum diaphragm unit.

3. Loosen the three control valve body attaching bolts.

4. Remove the attaching bolts from the front servo (Fig. 18), hold the strut with the fingers, and remove the servo.

5. To install the front servo, position the front band forward in the case with the end of the band facing downward. Make sure the front servo anchor pin is in position in the case web. Align the large end of the servo strut with the servo actuating lever, and align the small end with the band end.

6. Rotate the band, strut, and servo to align the anchor end of the band with the anchor in the case.

Push the servo body onto the control valve body tubes.

7. Install the attaching bolts and torque to specification.

8. Torque the control valve body attaching bolts to specification.

Check the clearance between the manual valve and manual lever actuating pin as given in Oil Pan and Control Valve Body Replacement.

9. Adjust the front band.

10. Install the vacuum diaphragm unit and rod.

11. Install the fluid filter and pan, and fill the transmission with fluid.

12. Adjust the downshift and manual linkage.

REAR SERVO REMOVAL AND INSTALLATION

1. Drain the fluid from the transmission, and remove the pan and fluid filter.

2. Remove the vacuum diaphragm unit.

3. Remove the control valve body and the two front servo tubes.

4. Remove the attaching bolts from the rear servo, hold the actuating and anchor struts with the fingers, and remove the servo.

5. To install the rear servo, position the servo anchor strut on the servo band, and rotate the band to engage the strut.

6. Hold the servo anchor strut in position with the fingers, position the actuating lever strut, and install the servo.

7. Install but do not tighten the servo attaching bolts. **The longer bolt must be installed in the inner bolt hole.**

8. Move the rear servo (with reasonable force) toward the centerline of the transmission case, against the servo attaching bolts. While holding the servo in this position, torque the attaching bolts to specification.

9. Install the two front servo tubes and the control valve body.

Check the clearance between the manual valve and the manual lever actuating pin as given above in Oil Pan and Control Valve Body Removal and Installation.

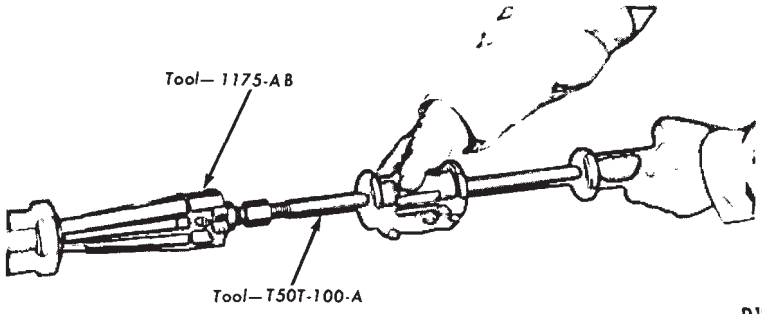


FIG. 19—Removing Extension Housing Seal

10. Adjust the rear band.
11. Install the fluid filter and pan, and fill the transmission with fluid.

EXTENSION HOUSING BUSHING AND REAR SEAL REMOVAL AND INSTALLATION

1. Disconnect the drive shaft from the transmission.
2. Carefully remove the seal with the tools shown in Fig. 19.
3. Remove the bushing as shown in Fig. 20. **Use the bushing remover carefully so that the spline seal is not damaged.**
4. When installing a new bushing use the special tool shown in Fig. 21.
5. Before installing a new seal, inspect the sealing surface of the universal joint yoke for scores. If scores are found, replace the yoke.
6. Inspect the counterbore of the housing for burrs. Polish off all burrs with crocus cloth.
7. Install the seal into the housing with the tool shown in Fig. 22. The seal should be firmly seated in the bore.

PARKING PAWL REMOVAL AND INSTALLATION

1. Raise the vehicle and drain the fluid from the transmission.
2. Place the engine support bar tool T65E-6000J under the converter housing.
3. Remove the driveshaft.
4. Remove the two nuts that secure the engine rear support to the crossmember.
5. Position a transmission jack under the transmission and raise it just enough to remove the weight from the crossmember.
6. Remove the crossmember to frame side rail bolts and nuts and position the crossmember out of the way. Lower the jack.
7. Remove the two rear support to extension housing attaching bolts and remove the support.
8. Disconnect the speedometer cable from the extension housing.
9. Remove the transmission pan and fluid filter.
10. Loosen the rear band adjusting screw lock nut and tighten the adjusting screw to 24 in-lbs torque. **This will tighten the rear band around the planet carrier and will hold the planet carrier and clutch assemblies in position during the parking pawl repair operation.**
11. Remove the small compensator pressure tube from the pressure regulator and control valve body.
12. Remove the main pressure oil tube by gently prying up the end that connects to the main control valve assembly first. Then, remove the other end of the tube from the pressure regulator. **Be sure to remove the tube in this manner. Failure to do so, could kink or bend the tube causing excessive transmission internal leakage.**
13. Disconnect the vacuum hose from the vacuum diaphragm and remove the vacuum diaphragm and control rod.
14. Loosen the front servo attaching bolts.
15. Remove the three control valve body attaching bolts and lower the valve body while pulling it off the front servo tubes. **Be careful not to damage the valve body or the tubes.**
16. Remove the rear servo attaching bolts and remove the rear servo and struts.
17. Remove the extension housing attaching bolts and housing.
18. Remove the output shaft and rear support assembly.
19. Remove the parking pawl pin from the case with a magnet.
20. Working from inside of the case, drive on the shoulder of the toggle lever (Fig. 53) pin with a small punch to move the retaining plug part way out of the case. Remove the plug with a pair of pliers.
21. To remove the toggle lever pin, slide the toggle lever toward the front of the case. Cock the lever to one side to apply pressure on the pin, then move the toggle to the rear of the case to move the pin outward. Repeat this procedure until the pin can be removed from the case. Lift the pawl and toggle from the case as an assembly.
22. Remove the pawl and toggle lever as an assembly.
23. Position the new parking pawl and link assembly, then install the toggle lever pin and the plug.
24. Secure the pawl to the case with the pawl pin.
25. Position a new gasket on the rear support. Hold it in place with transmission fluid or vaseline.
26. Make sure that the thrust washer is in place, then position the support and output shaft in place making sure that the pressure tubes are entered in the case.
27. Position a new gasket on the extension housing and secure the extension housing to the case with the attaching bolts.
28. Install the rear servo and strut as outlined under Rear Servo Removal and Installation.
29. Install the main control valve assembly as outlined under Oil Pan and Control Valve Body Removal and Installation.
30. Torque the front servo attaching bolts to specification.
31. Install the main pressure oil tube and the small compensator pressure tube to the control valve body and pressure regulator.
32. Adjust the front band.
33. Adjust the rear band.

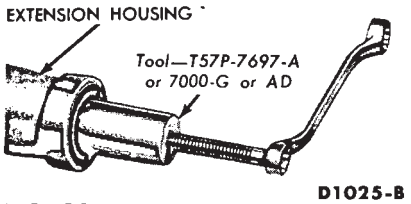


FIG. 20—Removing Extension Housing Bushing

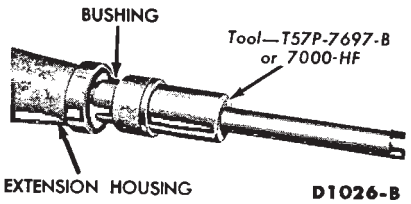


FIG. 21—Installing Extension Housing Bushing

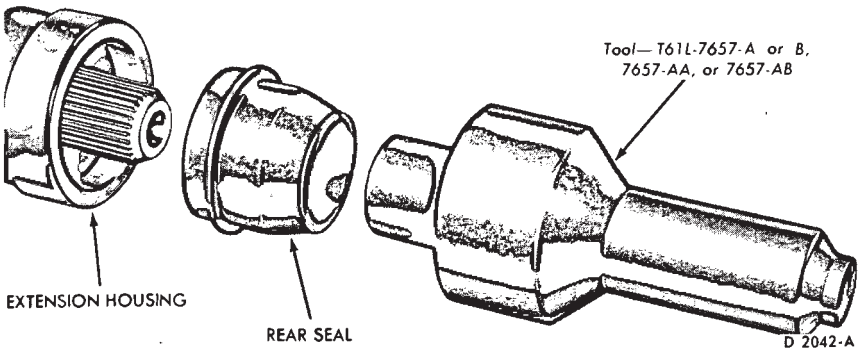


FIG. 22—Installing Extension Housing Seal

34. Position the vacuum control rod in the case and install the vacuum diaphragm unit. Connect the vacuum hose.
35. Install the filter, transmission pan and a new gasket.
36. Connect the speedometer cable to the extension housing.
37. Position the engine rear support to the extension housing and secure with the two attaching bolts.
38. Raise the transmission high enough with a jack to position the crossmember to the rear support and frame side rails. Secure the support to the crossmember with the two attaching nuts. Secure the crossmember to the frame side rails.
39. Lower the transmission and remove the jack.
40. Remove the engine support bar.
41. Adjust the transmission control linkage.
42. Install the driveshaft, then lower the vehicle.
43. Fill the transmission to the correct level with the specified fluid.

3 REMOVAL AND INSTALLATION

An oil impregnated plastic grommet is incorporated in the end of the manual shift linkage lever arm on all column shift vehicles. A special tool T67P-7341-A is required to install the grommet in the manual lever, and to install the manual linkage rod into the grommet. Refer to Part 17-01, Section 2, for the grommet replacement procedures.

TRANSMISSION AND CONVERTER REMOVAL AND INSTALLATION—FORD-METEOR

REMOVAL

1. Drive the vehicle on a hoist, **but do not raise at this time.**
2. Remove the two upper bolts and lock washers which attach the converter housing to the engine.
3. Raise the vehicle and remove the cover from the lower front side of the converter housing. Drain the fluid from the transmission.
4. Remove the converter drain plug. Drain the converter and reinstall the plug.
5. Disconnect the vacuum hose from the vacuum diaphragm unit and the tube from the extension housing clip.
6. Remove the flywheel-to-converter nuts and flat washers. Install the converter housing front plate to hold the converter in place when the transmission is removed.
7. Disconnect the starter cables from the starter and remove the starter.
8. Disconnect the oil cooler lines from the transmission. Remove the transmission vent tube.
9. Disconnect the downshift linkage from the transmission.
10. Disconnect the selector rod from the transmission manual lever.

On console and floor shift vehicles, disconnect the column lock rod at the transmission.

11. Disconnect the speedometer cable from the extension housing, and remove the driveshaft.
12. Support the transmission on a transmission jack. Secure the transmission to the jack with safety chain. Remove the two engine rear support to transmission bolts. Remove the two crossmember to frame side rail attaching bolts and nuts. Raise the transmission slightly to take the weight off the crossmember. Remove the rear support to crossmember bolt and nut and remove the crossmember.
13. Lower the transmission slightly and disconnect the fluid filler tube.
14. Remove the remaining converter housing to engine attaching bolts. Move the assembly to the rear and down to remove it.

INSTALLATION

1. If the converter has been removed from the converter housing, carefully position the converter in the housing, and then install the housing lower front cover plate to prevent the converter from slipping out of the housing.
2. Install the transmission vent tube. Rotate the converter until the studs are in a vertical position.
3. Rotate the flywheel as required to align the drain plug hole with the drain plug in the converter. With the transmission mounted on a transmission jack, move the converter and transmission assembly forward into position, using care not to damage the flywheel and the converter pilot.
4. Install the converter lower housing-to-engine bolts, then torque the bolts to specification.
5. Connect the fluid filler tube.
6. Install the crossmember.
7. Lower the transmission until the extension housing rests on the crossmember, and then install the rear support-to-crossmember bolts.
8. **The converter must rest squarely against the flywheel. This indicates that the converter pilot is not binding in the engine crankshaft.**
9. Install the converter attaching nuts and flat washers. Install the access plates.
10. Connect the oil cooler inlet and outlet lines to the transmission case.
11. Coat the front universal joint yoke seal and spline with C1AZ-19590-B lubricant, and install the drive shaft.
12. Connect the speedometer cable at the transmission.
13. Connect the manual selector rod to the transmission manual lever. Connect the column lock rod on console and floor shift vehicles.
14. Connect the downshift linkage at the transmission downshift lever.
15. Install the starter motor.
16. Connect the vacuum hose to the vacuum diaphragm unit and the tube to its clip.
17. Lower the transmission. Then install the upper two converter housing-to-engine bolts and tighten them to specification.
18. Lower the vehicle and fill the transmission with transmission fluid, following the recommended procedure.
19. Check the transmission, converter assembly, and fluid cooler lines for fluid leaks, and then adjust the manual and downshift linkages.

TRANSMISSION REMOVAL AND INSTALLATION WITHOUT CONVERTER—FORD-METEOR

The frame construction of the convertible will not permit the transmission to be moved rearward enough to clear the turbine shaft from the

converter. For this reason, the converter and transmission must be removed as a unit from this model.

REMOVAL

1. Raise the vehicle on a hoist.
2. Drain the fluid from the transmission.
3. Disconnect the hose from the vacuum diaphragm unit and the tube from its clip.
4. Remove the cover from the lower front side of the converter housing.
5. Remove the converter drain plug. Drain the converter and reinstall the plug.
6. Disconnect the drive shaft from the rear axle, and remove the drive shaft.
7. Disconnect the fluid cooler lines from the transmission. Remove the transmission vent tube.
8. Disconnect the downshift linkage at the transmission.
9. Disconnect the selector rod from the transmission manual lever.

On console and floor shift vehicles, disconnect the column lock rod at the transmission.

10. Disconnect the speedometer cable at the extension housing.
11. Remove the two engine rear support to transmission bolts.
12. Position a transmission jack under the transmission and raise it slightly to take the weight off the cross member.
13. Remove the crossmember bolts and the crossmember. Lower the transmission slightly and disconnect the fluid filler tube.
14. Remove the four transmission to converter housing bolts.
15. Secure the transmission to the jack with chain and move the jack rearward until the transmission clears the turbine shaft, then tip it forward to provide clearance. Lower the assembly and remove it from the vehicle.

INSTALLATION

1. Install guide pins in the two top transmission to converter housing attaching bolt holes.
2. Mount the transmission on the jack and secure with safety chain. **Be sure to align the turbine shaft splines with the turbine splines and the converter impeller flats with the flats in the front pump drive gear.**
3. Raise the transmission, move it toward the front of the vehicle, and position it on the converter housing.
4. Install the transmission to converter housing lower attaching bolts. Remove the two guide pins and install the two upper attaching bolts. Torque the bolts to specification.
5. Install the fluid filler tube.
6. Install the crossmember.
7. Lower the transmission onto the crossmember, and install the engine rear support to crossmember bolt. Install the two rear support to transmission bolts. Remove the jack.
8. Connect the oil cooler to transmission oil inlet and outlet lines to the transmission. Tighten the fittings securely.
9. **Lubricate the front universal slip yoke seal and spline with lubricant.** Slide the universal joint yoke onto the output shaft, and then connect the drive shaft at the rear axle.
10. Connect the speedometer cable to the extension housing.
11. Connect the downshift linkage at the transmission.
12. Connect the manual selector rod to the transmission manual lever. Connect the column lock rod on console and floor shift vehicles.
13. Adjust the linkage.
14. Connect the hose to the vacuum diaphragm unit and the tube to the clip.
15. Lower the vehicle to the floor and fill the transmission with the specified transmission fluid. Check the fluid level with the transmission at normal operating temperature.

TRANSMISSION AND CONVERTER REMOVAL AND INSTALLATION—FAIRLANE, MONTEGO, MUSTANG AND COUGAR

REMOVAL

1. Raise the vehicle and remove the cover from the front of the converter housing. Drain the fluid from the transmission.
2. Remove the converter drain plug.
3. When the fluid has stopped draining from the transmission and converter, remove the four flywheel-to-converter nuts. Install the drain plug in the converter and torque to specification. Install the converter housing front plate to hold the converter in place when the transmission is removed.
4. Disconnect the starter cables from the starter and remove the starter.
5. Remove the nuts that attach each muffler inlet pipe to the exhaust manifolds. Separate the pipes from the manifolds and allow them to hang.
6. Disconnect the oil cooler lines from the transmission.
7. Disconnect the vacuum hose from the vacuum diaphragm unit.
8. Disconnect the speedometer cable from the extension housing, and remove the drive shaft.
9. Disconnect the manual and downshift linkage from the transmission.

On console and floor shift vehicles, disconnect the column lock rod at the transmission.

10. Remove the vibration absorber from the extension housing if so equipped.
11. Remove the two rear support-to-crossmember nuts.
12. Position a transmission jack under the transmission and secure the transmission to the jack with a safety chain.
13. Raise the transmission just enough to remove the weight from the crossmember. Remove the two crossmember-to-frame side support bolts and nuts and remove the crossmember.
14. On a Fairlane or Montego, loosen the parking brake adjusting nuts and disconnect the U-bolt from its bracket. Allow the brake cable to hang.
15. Lower the transmission and remove the bolt that secures the transmission fluid filler tube to the cylinder head. Lift the filler tube and the dipstick from the transmission case.
16. Remove the six converter housing-to-cylinder block attaching bolts.
17. Move the jack rearward until the transmission clears the engine, then tip it forward to provide clearance. Lower the transmission and remove it from under the vehicle.

INSTALLATION

1. If the converter has been removed from the converter housing, carefully position the converter in the housing and install the housing lower front cover to prevent the converter from slipping out of the housing.
2. Rotate the converter until the studs are in a vertical position. Rotate the flywheel as required to align the drain plug hole with the drain plug in the converter.
3. Roll the transmission into position under the vehicle and raise it to align with the engine. Remove the

housing lower front cover that was previously installed. Move the transmission forward until the converter housing contacts the cylinder block. Install and torque the converter to cylinder block attaching bolts.

4. Remove the jack safety chain from the transmission.

5. Install a new O-ring on the lower end of the filler tube. Dip the O-ring in clean automatic transmission fluid and insert the filler tube in the transmission case.

6. Connect the two oil cooler lines to the transmission case.

7. Position the crossmember to the frame side supports and install and tighten the attaching bolts and nuts to specification.

8. On a Fairlane or Montego, install and adjust the parking brake cable.

9. Remove the transmission jack from under the vehicle. Install and torque the rear support-to-crossmember nuts.

10. Install the converter-to-flywheel attaching nuts and torque them to specification.

11. Secure the converter drain plug access cover to the lower end of the converter housing with the attaching bolts.

12. Install the starter and torque the attaching bolts to specification. Connect the starter cables.

13. Install and tighten the filler tube to cylinder head bolt.

14. Install the drive shaft.

15. Connect the speedometer cable to the extension housing.

16. Install the linkage rods on the transmission downshift and manual control levers. Connect the column lock rod on console and floor shaft vehicles.

17. Connect the vacuum hose to the vacuum diaphragm unit.

18. Connect the exhaust inlet pipes to the manifolds.

19. Position the vibration absorber (if so equipped) to the transmission extension housing and secure with the three attaching bolts.

20. Lower the vehicle. Fill the transmission to the proper level with the specified fluid. Adjust the manual and downshift linkage.

4 MAJOR REPAIR OPERATIONS

DISASSEMBLY OF TRANSMISSION

1. Before removing any of the transmission sub-assemblies, thoroughly clean the outside of the transmission case to prevent dirt from getting inside the mechanism.

2. After the transmission has been removed from the vehicle, place the assembly in the transmission holder shown in Fig. 23.

3. Remove the transmission pan, gasket, and filter retainer clip.

4. Lift the filter from the case.

5. Remove the spring seat from the pressure regulator. **Maintain constant pressure on the seal to prevent distortion of the spring seat and the sudden release of the springs.** Remove the pressure regulator springs and pilots, but do not remove the valves.

6. Remove the small compensator pressure tube from the pressure regulator and the control valve body.

7. Remove the main pressure oil tube by gently prying up the end that connects to the main control valve assembly first. Then, remove the other end of the tube from the pressure regulator. **Be sure to remove the tube in this manner. Failure to do so, could kink or bend the tube causing excessive transmission internal leakage.**

8. Loosen the front and rear servo band adjusting screws five turns. Loosen the front servo attaching bolts three turns.

9. Remove the vacuum diaphragm unit and push rod.

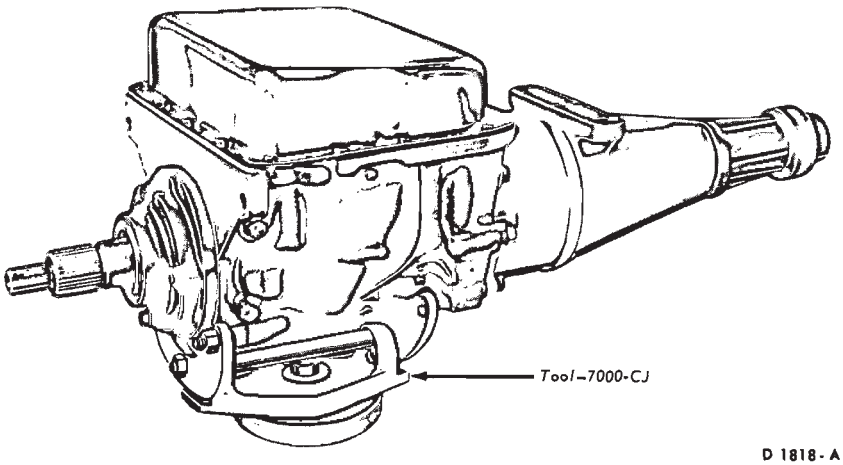


FIG. 23—Transmission Mounted in Holding Fixture

10. Remove the control valve body attaching bolts. Align the levers to permit removal of the valve body. Then lift the valve body clear of the transmission case. Pull the body off the servo tubes and remove it from the case.

11. Remove the regulator from the case. **Keep the control pressure valve and the converter pressure regulator valve in the pressure regulator to avoid damage to the valves.**

12. Remove the front servo apply and release tubes by twisting and pulling at the same time. Remove the front servo attaching bolts. Hold the front servo strut with the fingers, and lift the servo from the case.

13. Remove the rear servo attaching bolts. Hold the actuating and anchor struts with the fingers, and lift the servo from the case.

TRANSMISSION END PLAY CHECK

1. Remove one of the front pump attaching bolts. Mount the dial indicator support tool 77067 in the front pump bolt hole. Mount a dial indicator on the support so that the contact rests on the end of the turbine shaft.

2. Install the extension housing seal replacer on the output shaft to provide support for the shaft.

3. Pry the front clutch cylinder to the rear of the transmission with a

large screwdriver. Set the dial indicator at zero while maintaining a slight pressure on the screwdriver.

4. Remove the screwdriver and pry the units toward the front of the transmission by inserting the screwdriver between the large internal gear and the transmission case.

5. Record the indicator reading for use during transmission assembly. End play should be 0.010-0.029 inch (minimum end play is preferred). If end play is not within specifications a new selective thrust washer must be used when the transmission is assembled.

6. Remove the indicator support, and then remove the seal replacer from the output shaft.

REMOVAL OF CASE AND EXTENSION HOUSING PARTS

1. Remove the remaining front pump attaching bolts. Then remove the front pump and gasket. **If necessary, tap the screw bosses with a soft-faced hammer to loosen the pump from the case.**

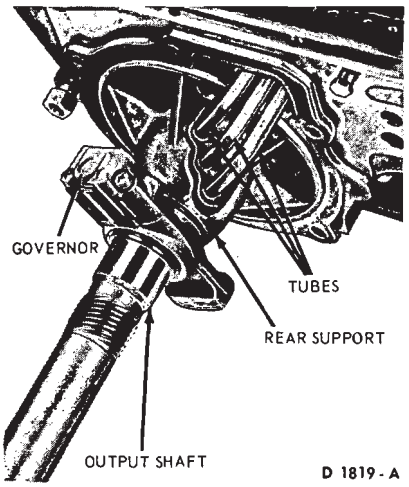


FIG. 24—Rear Support and Output Shaft Installed

2. Remove the lubrication tube from the case. Remove the five transmission to extension housing bolts. These bolts also attach the rear support to the case. Remove the extension housing.

3. Remove the output shaft assembly (Fig. 24). To facilitate output shaft removal, insert a screwdriver between the output shaft ring gear and pinion carrier and pry the output shaft rearward. Be careful not to bend the pressure tubes between the rear support or distributor sleeve and case as the tubes are removed from the case.

4. Remove the four seal rings from the output shaft with the fingers to prevent breaking the rings.

5. Remove the governor snap ring from the output shaft. Using a soft faced hammer, tap the governor assembly off the output shaft. Remove the governor drive ball (Fig. 25).

6. Remove the rear support and gasket from the output shaft. Remove the needle bearings and race from the rear support (Fig. 25).

7. Remove the selective thrust washer from the rear of the pinion carrier.

8. Remove the pinion carrier.

9. Remove the primary sun gear rear thrust bearing and races from the pinion carrier.

10. Note the rear band position for reference in assembly. The end of the band next to the adjusting screw has a depression (dimple) in the center of the boss. Squeeze the ends of the rear band together, tilt the band to the rear, and remove the rear band from the case.

11. Remove the two center support outer bolts (one each side) from the transmission case.

12. Exert enough pressure on the end of the input shaft to hold the clutch units together. Then remove the center support and the front and rear clutch assemblies as a unit (Fig. 16).

13. Install the clutch assemblies in the bench fixture (Fig. 27).

14. Remove the thrust washer from the front of the input shaft.

15. To remove the front band, position the band ends between the case webbing and tilt the bottom of the band rearward. Then, squeeze the ends of the band together and remove from the rear of the case.

16. Lift the front clutch assembly from the primary sun gear shaft.

17. Remove the bronze and the steel thrust washers from the rear clutch assembly. Wire the thrust washers together to assure correct installation.

18. Remove the front clutch seal rings from the primary sun gear shaft.

19. Lift the rear clutch assembly from the primary sun gear shaft.

20. Remove the rear clutch seal rings from the primary sun gear shaft. **Do not break the seal rings.**

21. Remove the primary sun gear front thrust washer.

PARTS REPAIR AND REPLACEMENT

During the repair of the subassemblies, certain general instructions which apply to all units of the transmission must be followed. These instructions are given here to avoid unnecessary repetition.

Handle all transmission parts carefully to avoid nicking or burring the

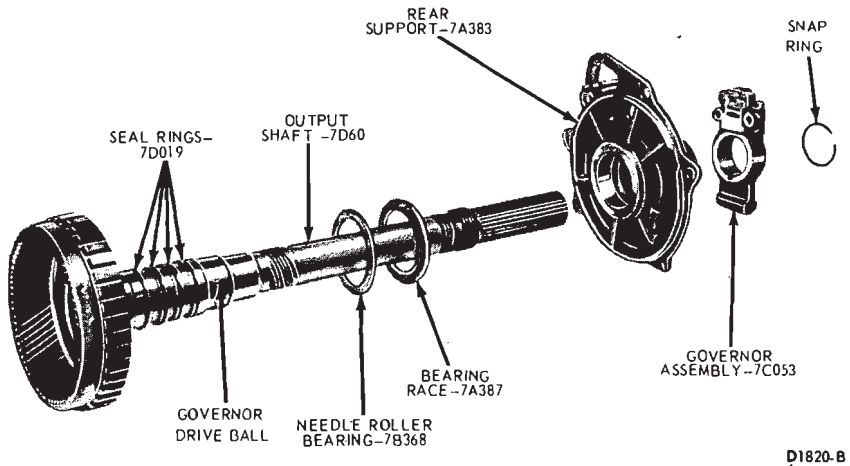


FIG. 25—Output Shaft Disassembled

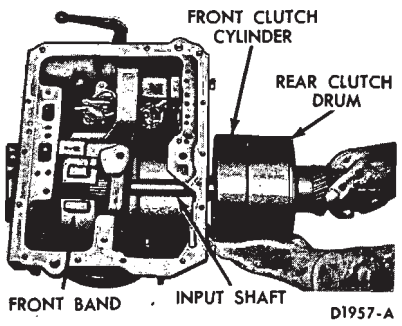


FIG. 26—Removing or Installing Input Shaft and Clutch

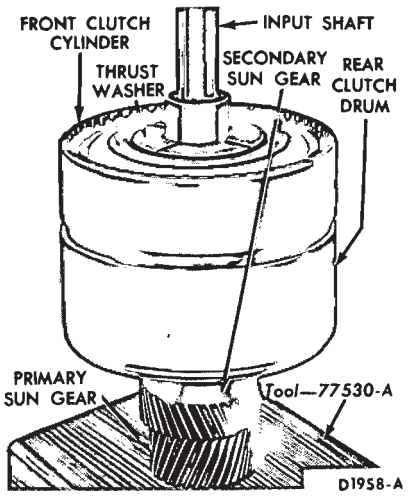


FIG. 27—Input Shaft and Clutch in Holding Fixture

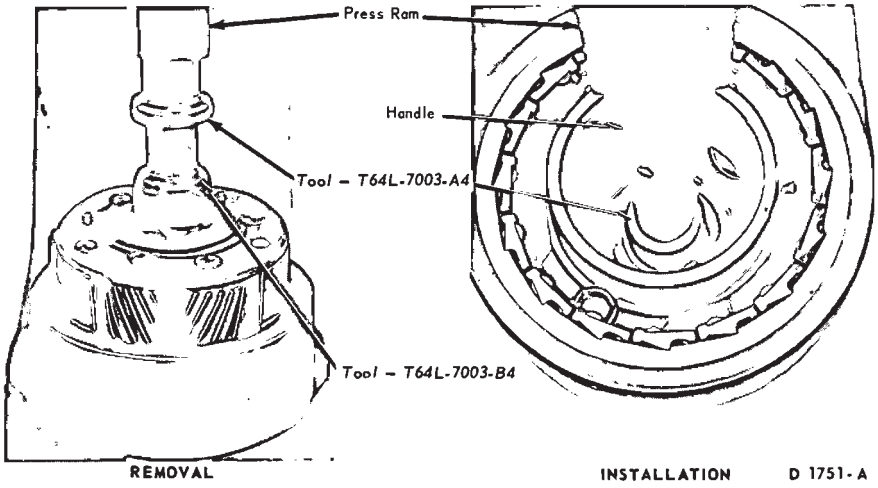


FIG. 28—Replacing Rear Brake Drum Support Bushing

bearing or mating surfaces.

Lubricate all internal parts of the transmission with transmission fluid before assembly. **Do not use any other lubricants except on gaskets and thrust washers which may be coated with vaseline to facilitate assembly. Always install new gaskets when assembling parts of the transmission.**

Tighten all bolts and screws to the recommended torque. For detail cleaning and inspection operations refer to Part 17-01.

REAR BRAKE DRUM SUPPORT BUSHING REMOVAL AND INSTALLATION

1. If the rear brake drum support bushing is to be replaced, press the bushing from the support as shown in Fig. 28.

2. Press a new bushing into the brake drum support with the tool shown in Fig. 28.

OUTPUT SHAFT BUSHING REMOVAL AND INSTALLATION

1. Remove the output shaft bushing if it is worn or damaged. Use the cape chisel and cut along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing.

2. Insert a new bushing into the installation tool and position the tool and bushing over the output shaft hub. Then, press the bushing on the output shaft hub as shown in Fig. 29.

PRIMARY SUN GEAR SHAFT

1. Position the primary sun gear shaft in the clutch bench fixture.

2. Check the fit of the seal rings in their respective bores. If equipped with cast iron seal rings, a clearance of 0.002-0.009 inch should exist between the ends of the rings.

If equipped with teflon seals that are worn or damaged, cut the seals from the shaft with a sharp knife. Be careful not to score the ring grooves.

3. Replace the teflon seals with cast iron seal rings, and check for free movement in the groove.

REAR CLUTCH

1. Remove the clutch pressure plate snap ring, and remove the pressure plate from the drum. Remove the waved cushion spring. Remove the composition and steel plates.

2. Compress the spring with the tools shown in Fig. 30 and remove the snap ring.

3. Guide the spring retainer while releasing the pressure to prevent the retainer from locking in the snap ring grooves.

4. Position the primary sun gear shaft in the rear clutch. Place an air hose nozzle in one of the holes in the shaft, and place one finger over the other hole. Then force the clutch piston out of the clutch drum with air pressure. **Hold one hand over the piston to prevent damage.**

5. Remove the inner and outer seal rings from the clutch piston.

6. Remove the rear clutch sun gear bushing if it is worn or damaged. Use the cape chisel (Fig. 32) and cut along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing.

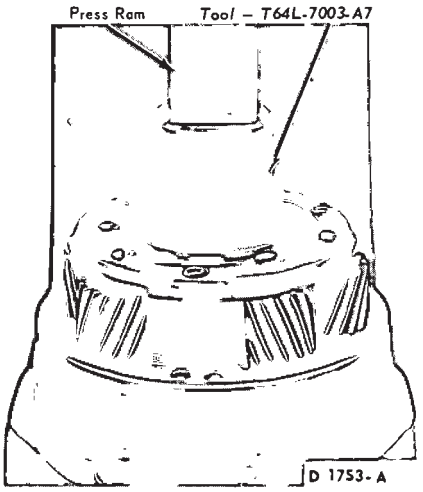


FIG. 29—Installing Output Shaft Bushing

7. Press a new bushing into the rear clutch sun gear with the tool shown in Fig. 33.

8. Install new inner and outer seal rings on the piston.

9. To install the piston in the clutch drum, lubricate the piston seals and tools (Fig. 31) with clean transmission fluid.

10. Push the small fixture down over the cylinder hub.

11. Insert the piston into the large fixture with the seal toward the thin-walled end.

12. Hold the piston and large fixture and insert as a unit into the cylinder. Push down over the small fixture until the large tool stops against the shoulder in the cylinder; then push the piston down, out of the tool, until it bottoms in the cylinder.

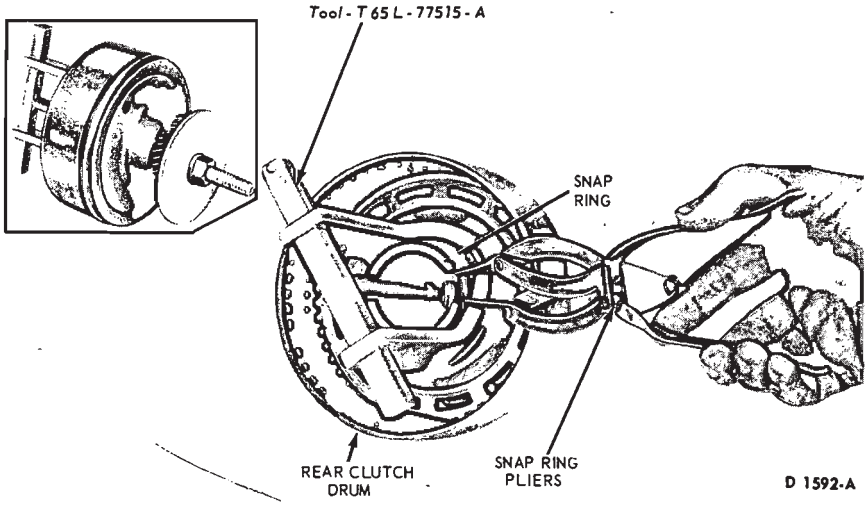


FIG. 30—Removing Rear Clutch Spring Snap Ring

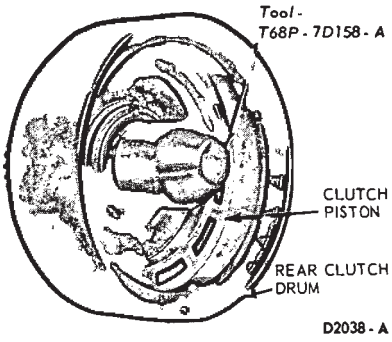


FIG. 31—Installing Rear Clutch Piston

Remove the tools.

13. Install the clutch release spring, and position the retainer on the spring.

14. Install the tool on the spring retainer as shown in Fig. 30. Compress the clutch spring, and install the snap ring. **While compressing the spring, guide the retainer to avoid interference of the retainer with the snap ring groove. Make sure the snap ring is fully seated in the groove.** When new composition clutch plates are used, soak the plates in automatic transmission fluid for 15 minutes before they are assembled.

15. Install a steel clutch plate and the waved cushion spring. Then, install steel and friction plates alternately starting with a steel plate.

16. Install the clutch pressure plate with the bearing surface down. Then install the clutch pressure plate snap ring. Make sure the snap ring is fully seated in the groove.

17. Check the free pack clearance between the pressure plate and the first internal plate with a feeler gauge. The clearance should be 0.030-0.055 inch. If the clearance is not within specifications, selective snap rings are available in the following thicknesses: 0.060-0.064, 0.074-0.078, 0.088-0.092 and 0.102-0.106 inch. Insert the correct size snap ring and recheck the clearance.

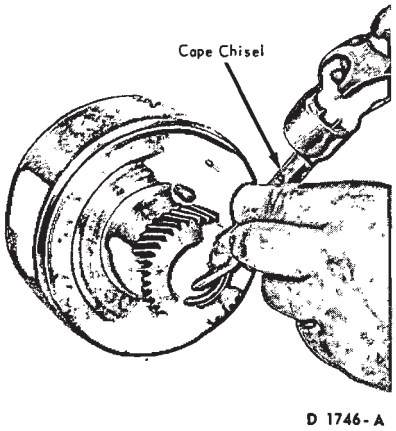


FIG. 32—Removing Rear Clutch Sun Gear Bushing

18. Install the thrust washer on the primary sun gear shaft. Lubricate all parts with automatic transmission fluid or petroleum jelly. Install the two center seal rings.

19. Install the rear clutch on the primary sun gear shaft. **Be sure all of the needles are in the hub if the unit is equipped with loose needle bearings.** Assemble two seal rings in the front grooves.

20. Install the steel and the bronze thrust washers on the front of the secondary sun gear assembly. If the steel washer is chamfered, place the chamfered side down.

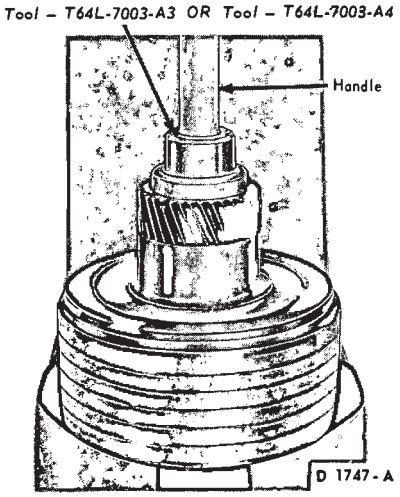


FIG. 33—Installing Rear Clutch Sun Gear Bushing

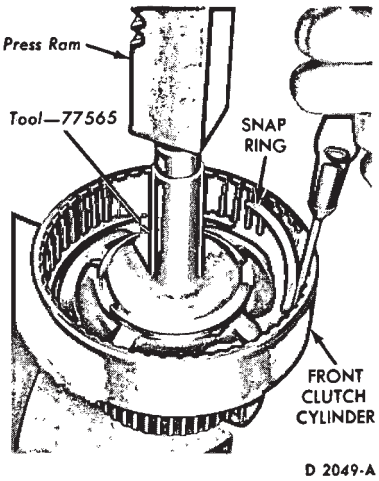


FIG. 34—Removing or Installing Front Clutch Snap Ring

FRONT CLUTCH

1. Remove the clutch cover snap ring with a screwdriver, and remove the input shaft from the clutch drum.

2. Remove the thrust washer from the thrust surface of the clutch hub. Insert one finger in the clutch hub, and lift the hub straight up to remove the hub from the clutch drum.

3. Remove the composition and the steel clutch plates, and then remove the pressure plate from the clutch drum.

4. Place the front clutch spring compressor on the release spring, position the clutch drum on the bed of an arbor press, and compress the release spring with the arbor press until the release spring snap ring can be removed (Fig. 34).

5. Remove the clutch release spring

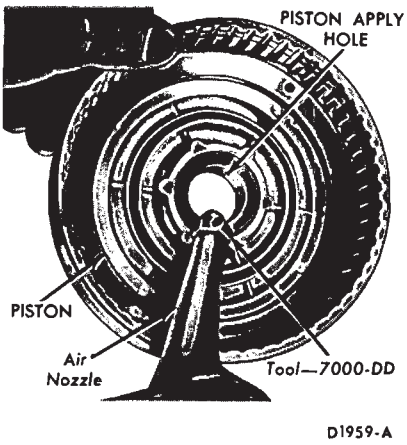


FIG. 35—Removing Front Clutch Piston

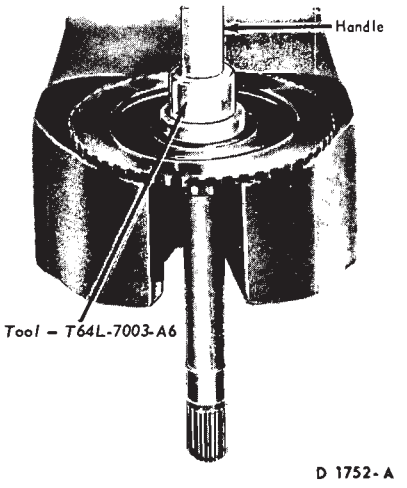


FIG. 36—Installing Input Shaft Bushing

from the clutch drum.

6. Install the special nozzle shown in Fig. 35 on an air hose. Place the nozzle against the clutch apply hole in the front clutch housing, and force the piston out of the housing.

7. Remove the piston inner seal from the clutch housing. Remove the piston outer seal from the groove in the piston.

8. Remove the input shaft bushing if it is worn or damaged. Use the cape chisel and cut along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing.

9. Slip a new bushing over the end of the installation tool and position the tool and bushing to the bushing hole. Then, press the bushing into the input shaft as shown in Fig. 36.

10. Lubricate all parts with transmission fluid. Install a new piston inner seal ring in the clutch cylinder. Install a new piston outer seal in the groove in the piston.

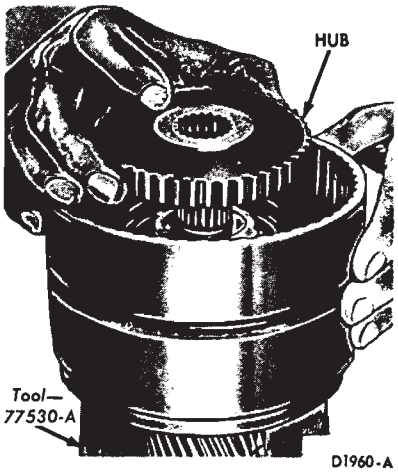


FIG. 37—Installing Clutch Hub

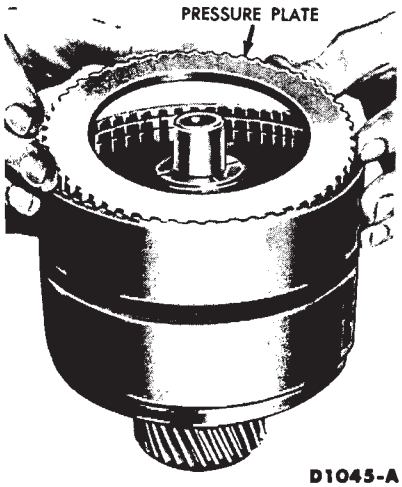


FIG. 38—Installing Pressure Plate

11. Install the piston in the clutch housing. **Make sure the steel bearing ring is in place on the piston.**

12. Position the release spring in the clutch cylinder with the concave side up. Place the release spring compressor on the spring, and compress the spring with an arbor press. Then install the snap ring as shown in Fig. 34. **Make sure the snap ring is fully seated in the groove.**

13. Install the front clutch housing on the primary sun gear shaft by rotating the clutch units to mesh the rear clutch plates with the serrations on the clutch hub. **Do not break the seal rings.**

14. Install the clutch hub in the clutch cylinder with the deep counterbore down (Fig. 37). Install the thrust washer on the clutch hub.

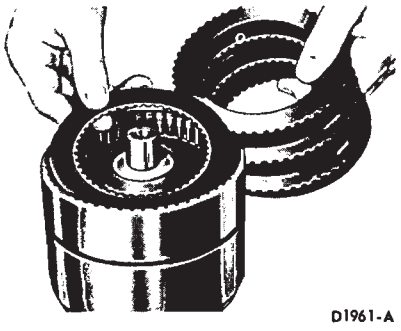


FIG. 39—Installing Clutch Plates

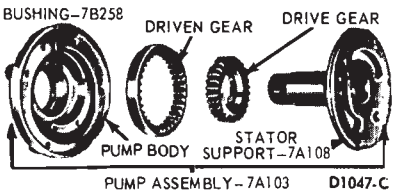


FIG. 40—Front Pump Disassembled

15. Install the pressure plate in the clutch cylinder with the bearing surface up (Fig. 38). Install the composition and the steel clutch plates alternately, starting with a composition plate (Fig. 39). When new composition clutch plates are used, soak the plates in automatic transmission fluid for 15 minutes before they are assembled.

The final friction plate to be installed is selective. Install the thickest plate that will be a minimum of 0.010 inch below input shaft shoulder in cylinder. For all other plates, use the thinnest available. Refer to the Specifications Section for available plate thickness.

16. Install the turbine shaft in the clutch cylinder, and then install the snap ring. **Make sure the snap ring is fully seated in the groove.**

17. Install the thrust washer on the turbine shaft.

FRONT PUMP

1. Remove the stator support attaching screws and remove the stator support. Mark the top surface of the pump driven gear with Prussian blue to assure correct assembly. **Do not scratch the pump gears.**

2. Remove the drive and driven gears from the pump body.

3. Refer to Fig. 40 for a disassembled view of the front pump. Inspect the pump body housing, gear pockets and crescent for scores.

4. If the pump housing bushing is

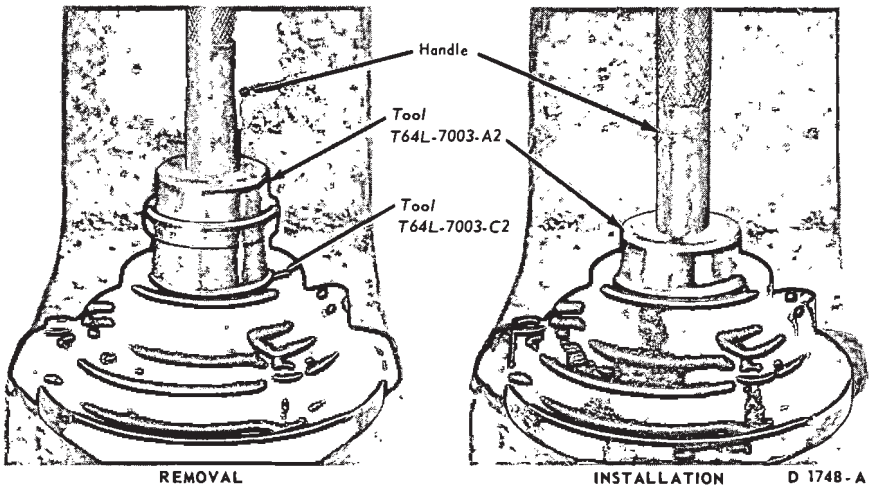


FIG. 41—Replacing Front Pump Housing Bushing

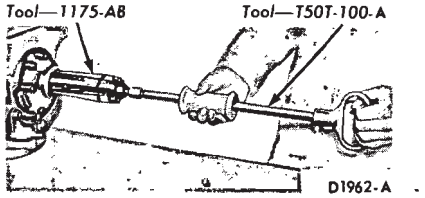


FIG. 42—Removing Front Pump Seal

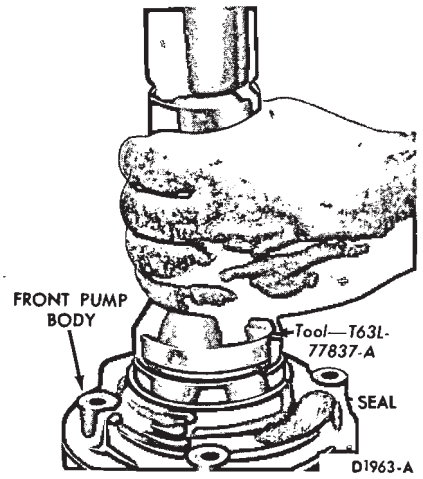


FIG. 43—Installing Front Pump Seal

to be replaced, press the bushing from the front housing with the tools shown in Fig. 41.

5. Press a new bushing into the pump housing with the handle and tool shown in Fig. 41.

6. If any parts other than the stator support or bushings are found defective, replace the pump as a unit. Minor burrs and scores may be removed with crocus cloth. The stator support is serviced separately.

7. Bolt the front pump to the transmission case with capscrews.

8. Install the oil seal remover shown in Fig. 42. Then pull the front seal from the pump body.

9. Clean the pump body counterbore. Then inspect the bore for rough spots. Smooth up the counterbore with crocus cloth.

10. Remove the pump body from the transmission case.

11. Coat the outer diameter of a new seal with FoMoCo Sealing Compound, or its equivalent. Then position the seal in the pump body. Drive the seal into the pump body with the tool shown in Fig. 43 until the seal is firmly seated in the body. Tool 77837 may be reworked (Fig. 44) to install the latest type seal.

12. Place the pump driven gear in the pump body with the mark on the gear facing down. Install the drive gear in the pump body with the chamfered side of the flats facing down.

13. Install the stator support and attaching screws. Check the pump gears for free rotation.

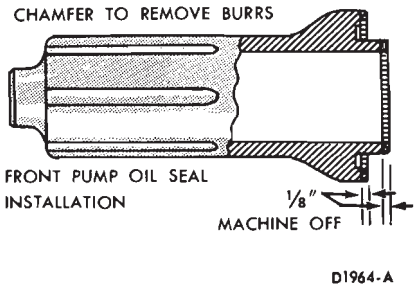


FIG. 44—Front Pump Seal Installing Tool Modification Drawing

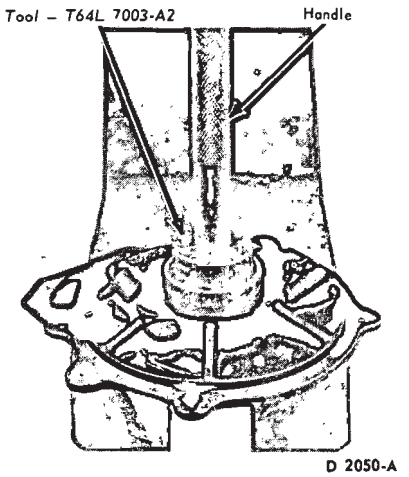


FIG. 45—Installing Rear Support Housing Bushing

REAR SUPPORT BUSHING REMOVAL AND INSTALLATION

1. Remove the three pressure tubes from the support housing.

2. Remove the rear support bushing if it is worn or damaged. Use a cape chisel and cut along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing.

3. Press a new bushing into the support housing with the tool shown in Fig. 45.

4. Install the pressure tubes.

PRESSURE REGULATOR

1. Remove the valves from the regulator body.

2. Remove the regulator body cover attaching screws, and remove the cover (Fig. 46).

3. Remove the separator plate.

4. Wash all parts thoroughly in clean solvent and blow dry with moisture-free compressed air.

5. Inspect the regulator body and cover mating surfaces for burrs.

6. Check all fluid passages for obstructions.

7. Inspect the control pressure and converter pressure valves and bores for burrs and scores. Remove all burrs carefully with crocus cloth.

8. Check the free movement of the valve in their bores. Each valve should fall freely into its bore when both the valve and bore are dry.

9. Inspect the valve springs for distortion.

10. Position the separator plate on

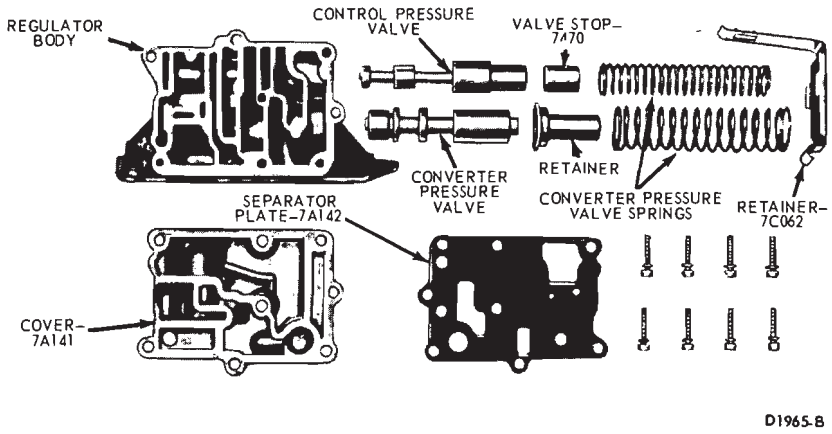


FIG. 46—Pressure Regulator Disassembled

the regulator cover.

11. Position the regulator cover and separator plate on the regulator body, and install the attaching screws. Torque the screws to specification.

12. Insert the valves in the pressure regulator body (Fig. 46).

CONTROL VALVE BODY

During the disassembly of the control valve assembly, avoid damage to valve parts and keep the valve parts clean. Place the valve assembly on a clean shop towel while performing the disassembly operation. **Do not separate the upper and lower valve bodies and cover until after the valves have been removed.**

Disassembly

1. Remove the manual valve (Fig. 47).

2. Remove the throttle valve body and the separator plate. Be careful not to lose the check valve when removing the separator plate from the valve body. Remove the throttle valve and plug.

3. Remove one screw attaching the separator plate to the lower valve body. Remove the upper body front plate. **The plate is spring-loaded. Apply pressure to the plate while removing the attaching screws.**

4. Remove the compensator sleeve and plug, and remove the compensator valve springs. Remove the compensator valve.

5. Remove the throttle boost short valve and sleeve. Remove the throttle boost valve spring and valve.

6. Remove the downshift valve and spring. Remove the 2-1 scheduling valve retainer from the valve body and remove the spring and valve.

7. Remove the upper valve body rear plate.

8. Remove the compensator cut back valve.

9. Remove the lower body side plate (Fig. 47). **The plate is spring-loaded. Apply pressure to the plate while removing the attaching screws.**

10. Remove the 1-2 shift valve and spring. Remove the inhibitor valve and spring.

11. Remove the two screws attaching the separator plate to the cover. Remove the lower body end plate. **The end plate is spring-loaded. Apply pressure to the plate while removing the attaching screws.**

12. Remove the low servo lockout valve, low servo modulator valve and spring.

13. Remove the 2-3 delay and throttle reducing valve sleeve, the throttle reducing valve, spring, and the 2-3 shift delay valve. Remove the 2-3 shift valve spring and valve.

14. Remove the transition valve spring and valve.

15. Remove the plate (Fig. 47) from the valve body cover.

16. Remove the check ball spring and check ball. Remove the 3-2 kickdown control valve spring and valve.

17. Remove the 1-2 shift accumulator valve spring retainer from the cover. Remove the spring, 1-2 shift accumulator valve and 1-2 shift accumulator lockout valve.

18. Remove the through bolts and screws. Then, separate the bodies. Remove the separator plates from the valve bodies and cover. Be careful not to lose the check valves.

Assembly

1. Arrange all parts in their correct positions (Fig. 47). Rotate the valves and plugs when inserting them in their bores to avoid shearing of soft body castings.

2. Place the check valve in the upper body as shown in Fig. 48. Then, position the separator plate on the body.

3. Position the lower body on the upper body, and start **but do not tighten the attaching screws.**

4. Place the check valve in the cover (Fig. 48) and position the cover and separator plate on the lower body. Start the four through bolts.

5. Align the separator with the upper and lower valve body attaching bolt holes. Install and torque the four valve body bolts to specification. **Excessive tightening of these bolts may distort the valve bodies, causing valves or plugs to stick.**

6. Install the 3-2 kickdown control valve and spring and the check ball and spring in the cover. Install the plate.

7. Insert the 1-2 shift accumulator lockout valve, 1-2 shift accumulator valve, and spring in the cover. Install the valve spring retainer.

8. Install the transition valve and spring in the lower body.

9. Install the 2-3 shift valve and spring. Install the 2-3 shift delay valve and the spring and throttle reducing valve in the sleeve. Slide the sleeve and valve into position in the lower body.

10. Install the low servo lockout valve spring. Install the low servo modulator and low servo lockout valves. Install the lower body end plate.

11. Install the inhibitor valve spring and valve in the lower body.

12. Install the 1-2 shift valve spring and valve. Install the lower body side plate.

13. Install the compensator cutback valve in the upper body. Install the upper body rear plate.

14. Install the 2-1 scheduling valve, spring, and spring retainer in the body. Install the downshift valve spring and valve.

15. Install the throttle boost valve and spring. Install the throttle boost short valve and sleeve.

16. Install the compensator valve, inner and outer compensator springs, and the compensator sleeve and plug.

17. Position the front plate. Apply pressure to the plate while installing

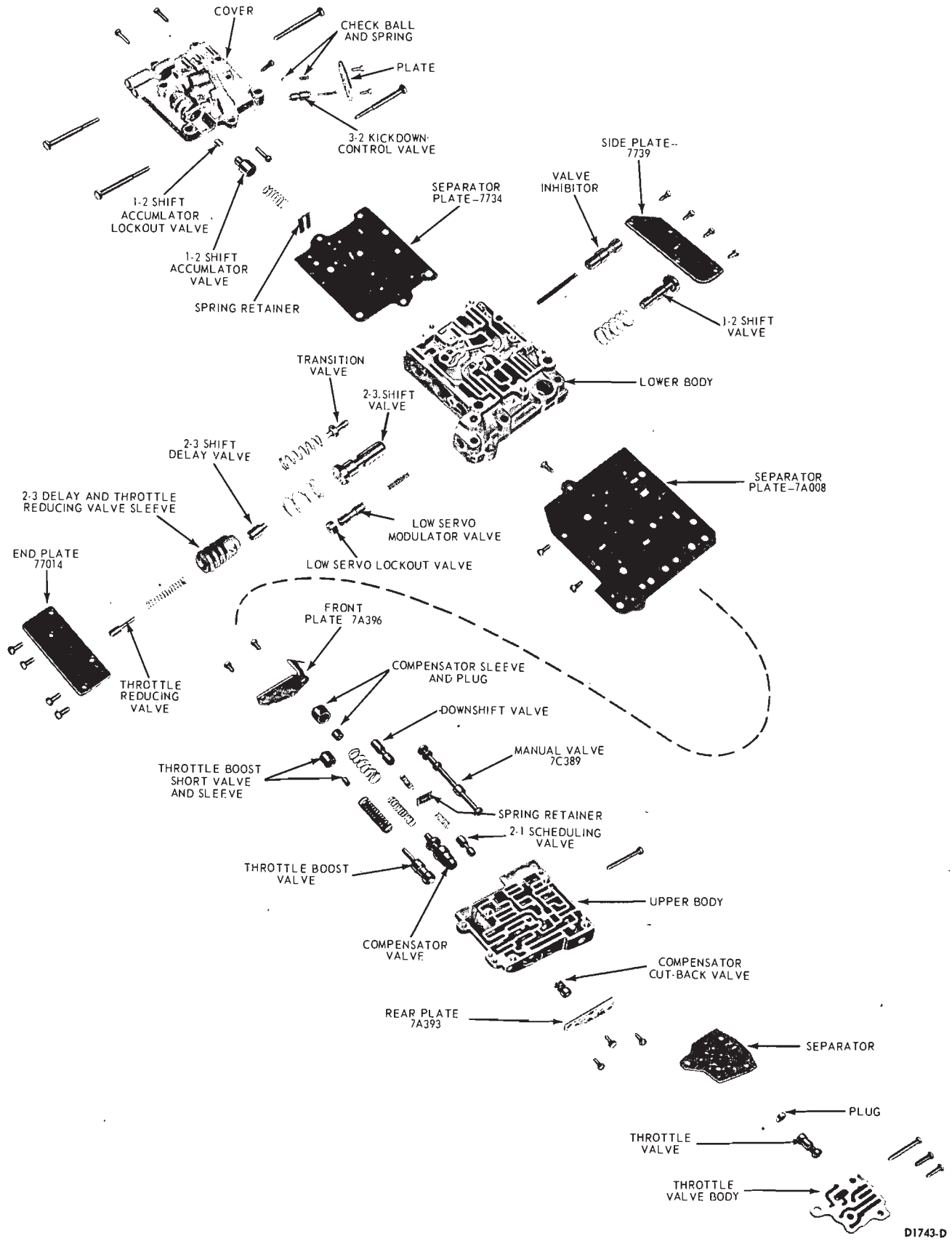


FIG. 47—Control Valve Disassembled

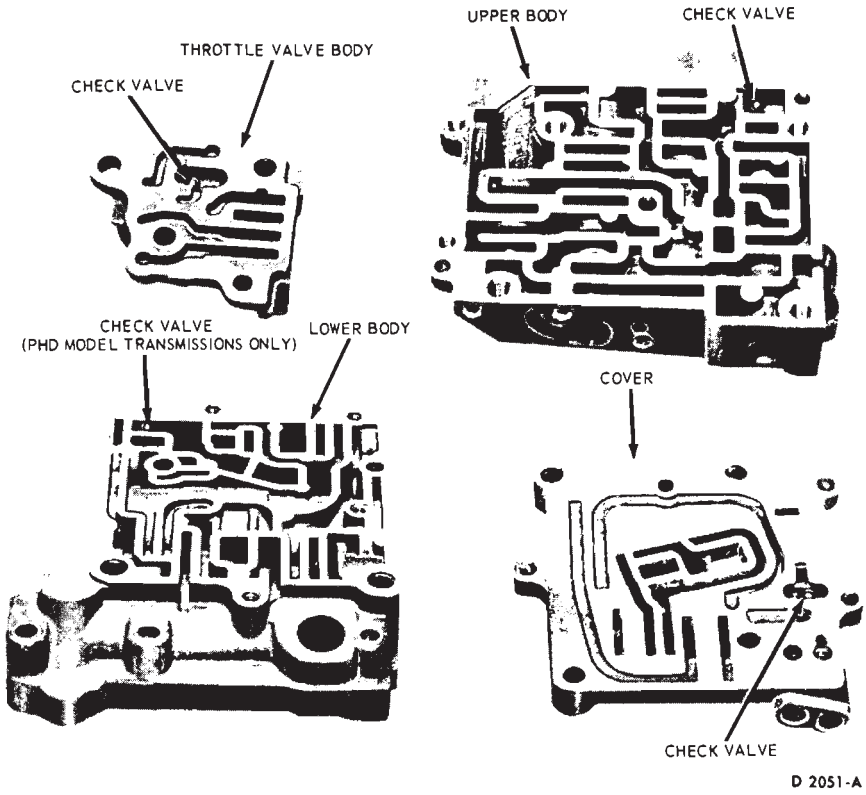


FIG. 48—Check Valve Locations

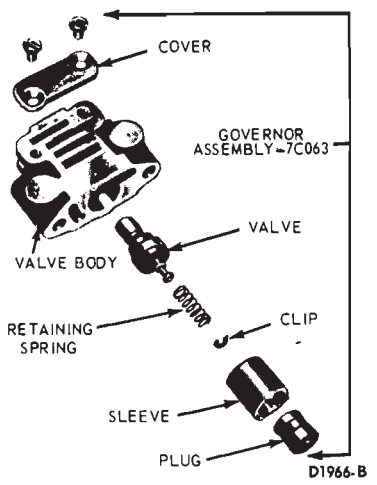


FIG. 49—Governor Disassembled

the two attaching screws.

18. Install the throttle valve, plug and check valve in the throttle valve body. Position the separator on the upper body and install the throttle valve body. Install the three attaching screws.

19. Install four screws attaching the cover to the lower body, two screws attaching the separator plate to the upper body, and one screw attaching the separator plate to lower body. Torque the cover and body screws to specification.

20. Install the manual valve.

GOVERNOR

1. Remove the governor valve body cover.

2. Remove the valve body from the counterweight.

3. Remove the plug, sleeve, and the valve and spring from the body (Fig. 49).

4. Install the governor valve and spring assembly in the bore of the valve body. Install the sleeve, and plug.

5. Install the body on the counterweight. **Make sure the fluid passages in the body and the counterweight are aligned.**

6. Position the valve body cover on the body, and install the screws.

FRONT SERVO

1. Remove the servo piston retainer snap ring (Fig. 50). The servo piston is spring-loaded. **Apply pressure to the piston when removing the snap ring.**

2. Remove the servo piston retainer, servo piston, and the return piston from the servo body. It may be necessary to tap the piston stem lightly with a soft-faced hammer to separate the piston retainer from the servo body.

3. On PHD models, remove the screw and washer from the end of the piston stem, and separate the piston retainer, return piston, and servo piston.

4. Remove all the seal rings, and remove the spring from the servo body.

5. Inspect the servo body for cracks and the piston bore and the servo piston stem for scores (Fig. 50).

Check fluid passages for obstructions.

6. Check the actuating lever for free movement, and inspect it for wear. If it is necessary to replace the actuating lever shaft, remove the retaining pin and push the shaft out of the bracket. If the shaft is not retained by a pin, it is retained in the body by serrations on one end of the shaft. These serrations cause a press fit at that end. To remove the shaft, press on the end opposite the serrations.

Inspect the adjusting screw threads and the threads in the lever.

7. Check the servo spring and servo band strut for distortion.

8. Inspect the servo band lining for excessive wear and bonding to the metal. **The band should be replaced if worn to a point where the grooves are not clearly evident.**

9. Inspect the band ends for cracks and check the band for distortion.

10. Lubricate all parts of the front servo with transmission fluid to facilitate assembly.

11. Install the inner and outer O-rings on the piston retainer. Install a new O-ring on the return piston and on the servo piston. Figure 51 identifies the servo components used in each transmission model.

12. On PHD models, tap the piston stem into the servo piston (Fig. 50). Insert the servo piston in the piston retainer. Tap the return piston onto the piston stem and into the piston retainer. Make certain that the dished side of the return piston is toward the servo piston. Secure the return piston to the stem with a screw and plain washer.

13. Position the servo piston release spring in the servo body. Install the servo piston, retainer, and return piston in the servo body as an assembly. Compress the assembly into the body, and secure it with the snap ring. **Make sure the snap ring is fully seated in the groove.**

14. Install the adjusting screw and

locknut in the actuating lever if they were previously removed.

REAR SERVO

1. Remove the servo actuating lever shaft retaining pin with a 1/8-inch punch. Remove the shaft and actuating lever needle bearings and thrust washers.
2. Press down on the servo spring retainer, and remove the snap ring. **Release the pressure on the retainer slowly to prevent the spring from flying out.**
3. Remove the retainer and servo spring (Fig. 52).
4. Force the piston out of the servo body with air pressure. Hold one hand over the piston to prevent damage.
5. Remove the accumulator piston from the servo piston.
6. Remove the piston seal ring.
7. Install a new seal ring on the servo piston.
8. Install the accumulator piston in the servo piston.
9. Install the piston in the servo body. **Lubricate the parts to facilitate assembly.** Install the servo spring with the small coiled end against the servo piston.
10. Install the spring retainer. Compress the spring with a C-clamp. Then install the snap ring. **The snap ring must be fully seated in the groove.**
11. Install the needle bearings in the actuating lever. Install the actuating lever and thrust washers with the socket in the lever bearing on the piston stem. Install the actuating lever shaft, aligning the retaining pin holes, and install the pin.
12. Check the actuating lever for free movement.

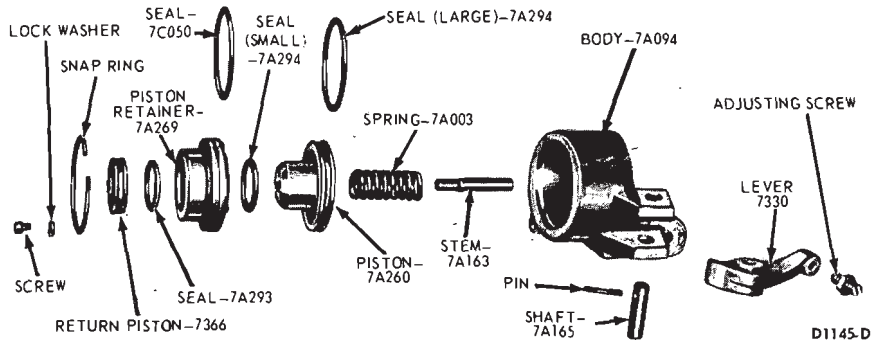
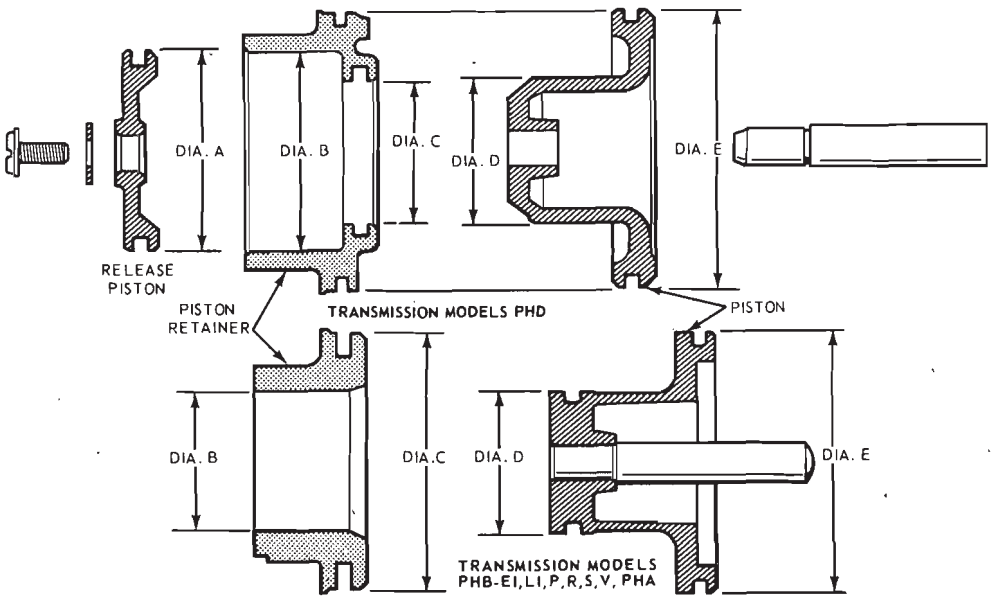


FIG. 50—Front Servo—Disassembled

TRANSMISSION CASE LINKAGE REPAIR

Disassembly

1. Remove the inner downshift lever shaft nut (Fig. 53). Then remove the inner downshift lever.
2. Remove the outer downshift lever and shaft. Remove the downshift shaft seal from the counterbore in the manual lever shaft.
3. Remove the cotter pin from the parking pawl toggle operating rod and remove the clip from the parking pawl operating lever. Remove the parking pawl operating rod.
4. Rotate the manual shaft until the detent lever clears the detent plunger. Then remove the detent plunger and spring. **Do not allow the detent plunger to fly out of the case.**



MODELS	RELEASE PISTON	RETAINER	PISTON	DIAMETER-INCHES				
				A	B	C	D	E
PHB-P,R,S	NONE	IP-77364-A	IP-77359-B	–	1.438	2.3705	1.4225	2.3585
PHB-EI, LI, V, PHA	NONE	C9AP-7A269-A	C9ZP-7A260-A	–	1.313	2.3705	1.2975	2.3585
PHD	PAN-7366-B	PAN-77364-A	PAN-77359-A	1.4090	1.4185	1.2885	1.2881	2.4915

D2030-B

FIG. 51—Front Servo Component Identification

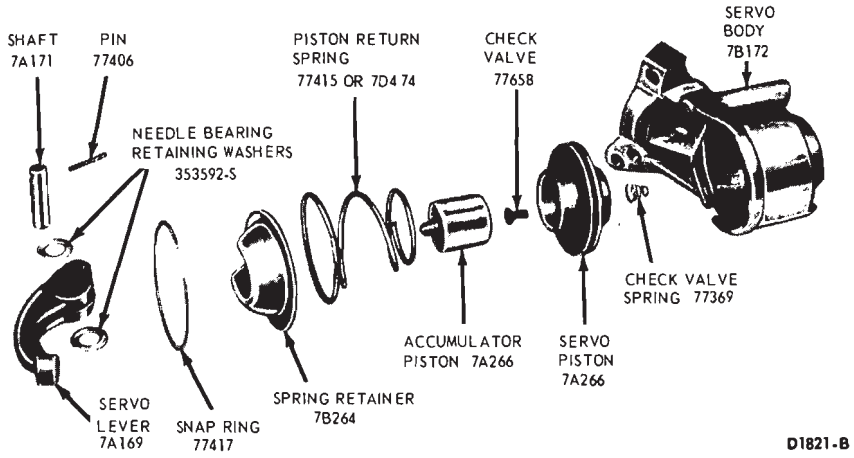


FIG. 52—Rear Servo—Disassembled

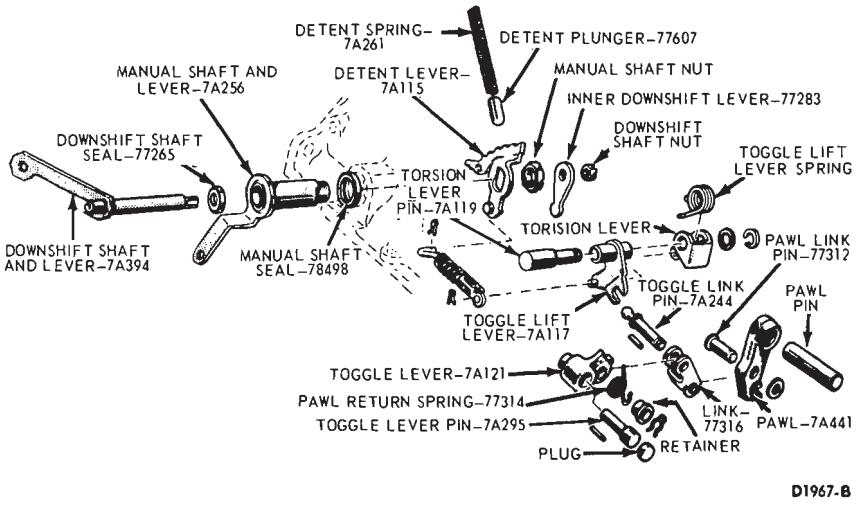


FIG. 53—Transmission Case Control Linkage

5. Remove the manual lever shaft nut, and remove the detent lever. Remove the outer manual lever and shaft from the transmission case.

6. Tap the toggle lever sharply toward the rear of the case to remove the plug and pin.

7. Remove the pawl pin by working the pawl back and forth. Remove the pawl and toggle lever assembly, and then disassemble.

8. Remove the manual shaft seal and case vent tube. Remove the oil cooler return check valve from the back of the case.

Assembly

1. Coat the outer diameter of a new manual shaft seal with sealer, then install the seal in the case with a driver.

2. Install the vent tube in the transmission case.

3. Assemble the link to the pawl with the pawl link pin, washer, and pawl return spring. Assemble the toggle lever to the link with the toggle link pin. Position the pawl return spring over the toggle link pin, and secure it in place with the washer and the small retainer clip (Fig. 53). Install the assembly in the transmission case by installing the pawl pin and the toggle lever pin. Install the torsion lever assembly. Position the spring on the torsion lever with a screwdriver. Make certain that the short side of toggle does not extend beyond the largest diameter of the ball or the toggle lever pin (Fig. 53). Tap the toggle lever in or out as necessary to center the toggle lever on the ball.

4. Install the manual lever and shaft in the transmission case. Position the detent lever on the shaft, and secure it with a nut. Tighten the nut to 20-30 ft-lbs torque. Rotate the manual lever to the rear of the case. Position the detent spring in the case. Hold the detent plug on the spring with a 3/16-inch socket wrench, then depress the spring until the plug is flush with the case. Carefully rotate the manual lever to the front of the case to secure the plug. **A piece of thin walled tubing may be used to depress the plug if a small socket wrench is not available.**

5. Position the ends of the parking pawl operating rod in the detent lever and toggle lift lever, and secure with the two small retaining pins.

6. Install a new seal on the downshift lever shaft, then install the lever and shaft in the case. Position the inner downshift lever on the inner end of the shaft with the mark O facing toward the center of the case. Install the lock washer and nut, then tighten the nut to 17-20 ft-lbs torque.

7. Check the operation of the linkage. The linkage should operate freely without binding.

TRANSMISSION CASE BUSHING REMOVAL AND INSTALLATION

1. If the transmission case bushing is to be replaced, press the bushing out of the case with the tools shown in Fig. 54.

2. Install a new transmission case bushing with the tool shown in Fig. 54.

ASSEMBLY OF TRANSMISSION

Do not use force to assemble mating parts. If the parts do not assemble freely, examine them for the cause of the difficulty. **Always use new gaskets and seals during the assembly operations.**

CLUTCH ASSEMBLIES

1. Install the front band in the transmission case so that the anchor end is aligned with the anchor in the case.

2. Make sure the thrust washer is in place on the input shaft. Lift the clutch assemblies out of the holding block. **Do not allow the clutches to separate.**

3. Install the clutch sub-assemblies in the transmission case while positioning the servo band on the drum. Hold the units together while installing them (Fig. 26).

CENTER SUPPORT, ONE-WAY CLUTCH, PINION CARRIER, AND OUTPUT SHAFT

The production center supports are

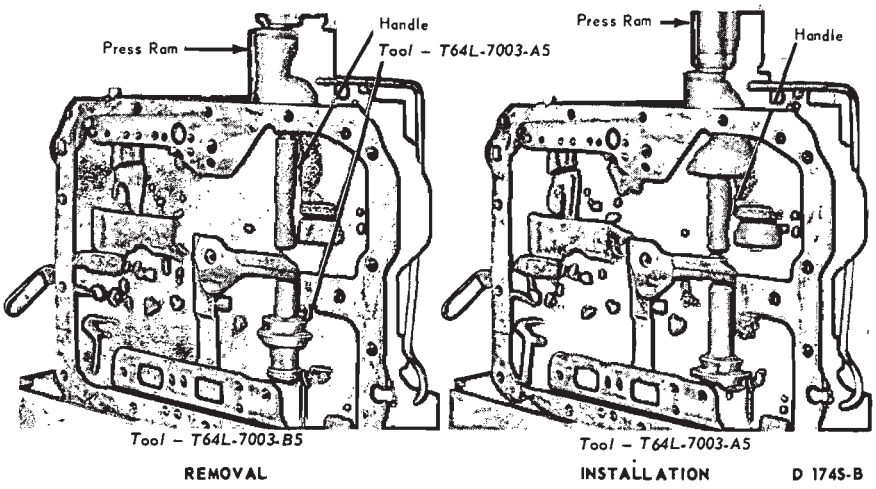


FIG. 54—Replacing Transmission Case Bushing

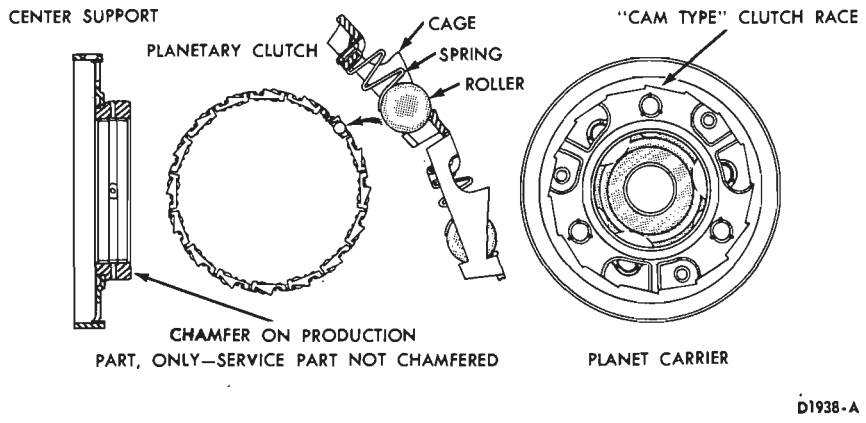


FIG. 55—Planetary Clutch, Planet Carrier and Center Support

chamfered at the edge of the race (Fig. 55). The service center supports are not chamfered. The following assembly procedures cover both types of center supports.

Installation—Center Support With Chamfered Edge

1. Install the center support and the rear band in the case.
2. Install the primary sun gear rear thrust bearing race, needle bearing, and front thrust bearing race if used in the planet carrier using petroleum jelly to retain them in place.
3. Lubricate the bearing surface on the center support, the rollers of the planetary clutch, and the cam race in the carrier with petroleum jelly (Fig. 55).
4. Install the planetery clutch in the carrier (Fig. 56).
5. Carefully position the planet carrier on the center support. Move the carrier forward until the clutch rollers are felt to contact the bearing surface of the center support.
6. While applying forward pressure on the planet carrier, rotate it counterclockwise, as viewed from the rear (Fig. 56). This will cause the clutch rollers to roll toward the large opening end of the cams in the race, compressing the spring slightly, so that the rollers will ride up the chamfer on the planetary support and onto the inner race.
7. Push the planet carrier all the way forward.
8. Check the operation of the planetary clutch by rotating the carrier counterclockwise. It should rotate counterclockwise (viewed from the rear) with a slight drag, and it should lock up when attempting to rotate it in a clockwise direction.
9. Install the selective thrust washer on the pinion carrier rear pilot. **If the end play was not within specifications when checked prior to disassembly, replace the washer with one of proper thickness.** Refer to the Specification Section for selective thrust washer thickness.
10. Install the output shaft, carefully meshing the internal gear with the pinions.

Installation—Center Support not Chamfered

1. Install the center support and the rear band in the case.
2. Install the primary sun gear, rear thrust bearing race, needle bearing and front thrust bearing race if used in the planet carrier using petroleum jelly to retain them in place.
3. Lubricate the bearing surface of the center support, the rollers of the planetary clutch, and the cam race in the carrier with vaseline.
4. Install the planetary clutch on the center support with the saw teeth of the clutch cage pointing in the clockwise direction as viewed from the rear (Fig. 57). Make sure that all rollers are in the cage.
5. Position the planet carrier on the support so that the cams in the carrier engage the saw teeth on the clutch cage.
6. Push the planet carrier forward until the rollers are felt to contact the surface of the cam race.
7. While applying forward pressure on the carrier, rotate it counterclockwise as viewed from the rear. This will cause the rollers to roll toward the large opening end of the cams in the race, compressing the springs slightly, so that the rollers will enter the cams.
8. Some rollers may become cocked preventing their entry into the outer race. These rollers must be positioned individually with a small screwdriver by pushing the rear of the rollers toward the transmission and into the cam race (Fig. 57). Keep pressure applied to the carrier at all times.
9. After all of the rollers have been started into the cam race, rotate the carrier counterclockwise while pushing it forward. Again, straighten any rollers which still may be in a cocked position and prevent the carrier from sliding onto the support.
10. Make sure that all springs are entered in the cam race before attempting to push the carrier on the support. Push the carrier all the way forward and check the operation of the clutch by rotating it in a counterclockwise direction. The carrier

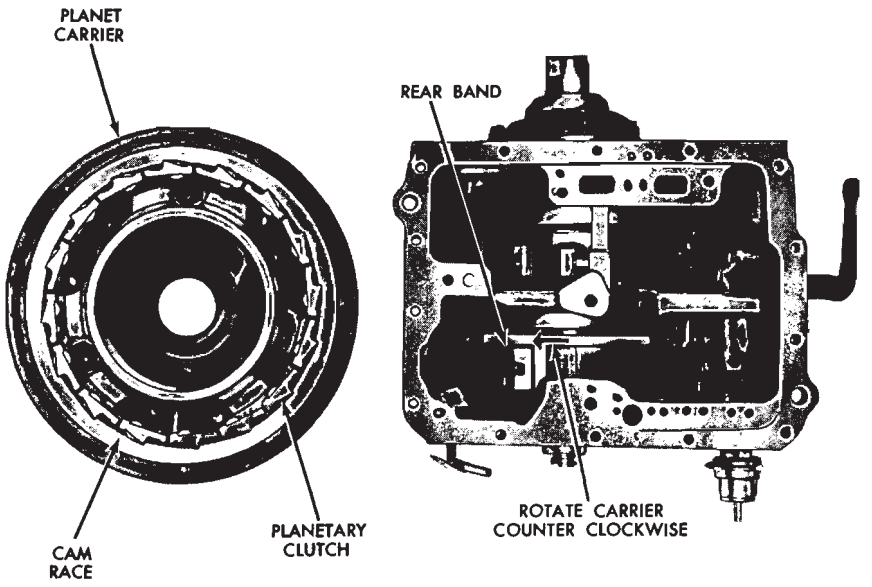


FIG. 56—Planetary Clutch Installation in Carrier—Chamfered Center Support

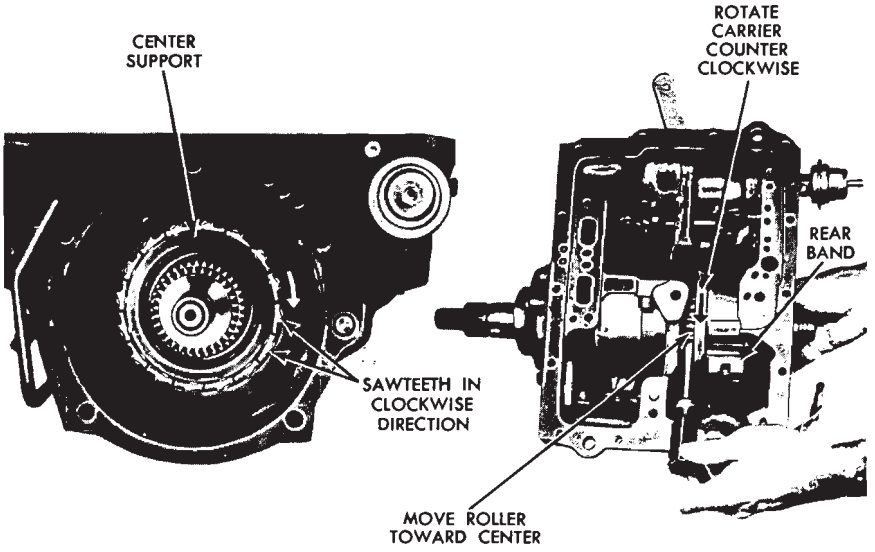


FIG. 57—Planetary Clutch Installation in Carrier—Center Support Not Chamfered

should rotate counterclockwise with a slight drag and should lock up when attempting to rotate it in a clockwise direction.

11. Install the selective thrust washer on the pinion carrier rear pilot. **If the end play was not within specifications when checked prior to disassembly, replace the washer with one of proper thickness.** Refer to the Specification Section for selective thrust washer thickness.

12. Install the output shaft, carefully meshing the internal gear with the pinions.

REAR SUPPORT

1. Position the needle bearing and retainer on the rear support (Fig. 25).

2. Position a new rear support to case gasket on the rear support. Retain the gasket with transmission fluid.

3. Install the rear support. As the support is installed, insert the tubes into the case.

GOVERNOR

1. Position the governor drive ball in the pocket in the output shaft. Retain the ball with transmission fluid.

2. Install the governor assembly, aligning the groove with the ball in the output shaft.

3. Install the governor with the governor body plate toward the front of the vehicle (Fig. 24). Install the governor snap ring.

EXTENSION HOUSING

1. Insert the extension housing oil seal replacer and pilot in the housing. Position a new gasket to the extension housing and install the extension housing on the transmission case. Coat the bolt threads with B5A-19554-A sealer and install the extension housing attaching bolts, vacuum tube clip, and external tooth lock washer. **The lock washers must be installed with the rolled edge toward the transmission case to insure a tight seal.**

2. Torque the extension housing attaching bolts to specification.

3. Install the lubrication tube.

FRONT PUMP

1. Position a new front pump gasket in the counterbore of the transmission case.

2. Install the front pump, aligning the pump bolt holes with the holes in the case. Install three of the front pump attaching bolts and torque them to specification.

TRANSMISSION END PLAY CHECK

1. Mount the dial indicator support in a front pump bolt hole. Mount a dial indicator on the support so that the contact rests on the end of the turbine shaft.

2. Use a large screwdriver to pry the front of the clutch drum toward the rear of the transmission. Set the dial indicator at zero.

3. Remove the screwdriver and pry the units toward the front of the transmission by inserting a screwdriver between the large internal gear and

the transmission case. Note the indicator reading. End play should be 0.010-0.029 inch (minimum end play is preferred).

4. Remove the indicator and the tool from the extension housing.

5. Install the one remaining front pump attaching bolt and torque it to specification.

FRONT SERVO

1. Position the front band forward in the case with the band ends up.

2. Position the servo strut with the slotted end aligned with the servo actuating lever, and with the small end aligned with the band end. Rotate the band, strut, and servo into position engaging the anchor end of the band with the anchor pin in the case.

3. Locate the servo on the case, and install the attaching bolts. **Tighten the attaching bolts only two or three threads.**

4. Install the servo release tube.

REAR SERVO

1. Position the servo anchor strut, and rotate the rear band to engage the strut.

2. Position the servo actuating lever strut with a finger, and then install the servo and attaching bolts. Move the rear servo (with reasonable force) toward the centerline of the transmission case, against the servo attaching bolts. While holding the servo in this position, torque the attaching bolts to specification.

3. Install the front servo apply tube.

PRESSURE REGULATOR BODY

1. Install the pressure regulator body and attaching bolts, and torque the bolts to specifications.

2. Install the control and converter valve guides and springs. Install the spring retainer.

CONTROL VALVE BODY

1. Install the control valve assembly, carefully aligning the servo tubes with the control valve. Align the inner downshift lever between the stop and the downshift valve. Shift the manual lever to the 1 position. **Align the manual valve with the actuating pin in the manual detent lever. Do not tighten the attaching bolts.**

2. Move the control valve body toward the center of the case until the clearance is less than 0.050 inch between the manual valve and the actuating pin on the manual detent lever.

3. Torque the attaching bolts to specification. Be sure that the rear fluid screen retaining clip is installed under the valve body bolt as shown in Fig. 18.

4. Install the main pressure oil tube. **Be sure to install the end of the tube that connects to the pressure regulator assembly first. Then, install the other end of the tube into the main control assembly by tapping it gently with a soft hammer.**

5. Install the small control pressure compensator tube in the valve body and regulator.

6. Turn the manual valve one full turn in each manual lever detent position. If the manual valve binds against the actuating pin in any detent position, loosen the valve body attaching bolts and move the body away from the center of the case. Move the body only enough to relieve the binding. Torque the attaching bolts and check the manual valve for binding.

7. Torque the front servo attaching bolts to specification.

FRONT AND REAR BAND ADJUSTMENTS

Adjust the front and rear bands as detailed in Section 2.

VACUUM DIAPHRAGM UNIT

1. Position the control rod in the bore of the vacuum diaphragm unit and install the diaphragm unit. Make sure the control rod enters the throttle valve as the vacuum unit is installed.

2. Torque the diaphragm unit to specification.

FLUID FILTER AND OIL PAN

1. Position the fluid filter on the rear clip so that the tang enters the hole in the filter flange. Then, rotate the filter (clockwise) until the grommet is over the pump inlet port of the valve body regulator and press the filter down firmly. Install the filter retaining clip.

2. Place a new gasket on the transmission case and install the pan. Install the attaching bolts and lock washers and torque the bolts to specification.

If the converter and converter housing were removed from the transmission, install these components. Position the transmission assembly on the transmission jack, and refer to Transmission Installation Procedures for installing the transmission.

5 SPECIFICATIONS

APPROXIMATE REFILL CAPACITIES

	U.S. Measure	Imperial Measure
FMX Transmission – All Car Lines	11 qt.	9-1/4 qt.
C4 Transmission – Ford All Engines	10-1/4 qt.	8-1/4 qt.
Falcon and Mustang – 170 and 200 Engines	8 qt.	6-1/2 qt.
Fairlane, Montego, and Mustang – 351 Engine	10-1/4 qt.	8-1/4 qt.
All Other Engines	9 qt.	7-1/4 qt.
C6 Transmission – Lincoln	13 qt.	10-3/4 qt.
All Other Models	12-1/4 qt.	10-1/2 qt.

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CONVERTER IDENTIFICATION AND STALL SPEEDS

Converter Part Number	Nominal Size	Stall Ratio	Identification No. ①	Transmission Model	Engine CID	Stall Speed
C9ZP-7902-A	12	2.05:1	56	PHD-A1	240-1V	1280 – 1480
				PHA-F, G PHD-B1	302-2V	1440 – 1640
				PHB-E1, L1, V	351-2V	1560 – 1780
				PHB-P, R, S	351-4V GT	1650 – 1850

① Converter identification is stamped on the converter cover adjacent to the converter drive stud.

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CONTROL PRESSURE AT ZERO GOVERNOR RPM

Engine Speed	Throttle	Manifold Vac. Ins. Hg.	Range	Control Line Pressure (PSI)		
				PHA-F, G PHB-L, V	PHB PHD-A, B	PHB-P,R,S,
Idle	Closed	Above 18 ①	P, N, D, 2, 1	56 – 79	56 – 80	56 – 82
			R	61 – 108	59 – 110	59 – 111
As Required	As Required	10	D, 2, 1	70 – 124	69 – 125	69 – 126
As Required	As Required	Below 1.0	D, 2, 1	134 – 187	133 – 188	133 – 189
			R	185 – 221	184 – 221	184 – 221

① At altitudes above sea level, it may not be possible to obtain 18 inches of engine vacuum at idle. For idle vacuum of less than 18 inches, refer to the following table to determine idle speed pressure specification in D driving range.

Engine Vacuum	Line Pressure
17 inches	57-67
16 inches	57-67
15 inches	57-72
14 inches	57-79
13 inches	57-86
12 inches	57-92
11 inches	57-99

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CHECKS AND ADJUSTMENTS

Operation	Specification
Transmission End Play Check	0.010-0.029 (Selective Thrust Washers Available)
Turbine and Stator End Play Check	New or rebuilt 0.023 max., Used 0.040 max. ①
Front Band Adjustment (Use 1/4 inch spacer between adjustment screw and servo piston stem)	Adjust screw to 10 in-lbs torque. Remove spacer, then tighten screw an additional 3/4 turn and lock.
Rear Band Adjustment	Adjust screw to 10 in-lbs torque, then back off exactly 1-1/2 turns and tighten lock nut.
Primary Sun Gear Shaft Ring End Gap Check	0.002-0.009
Rear Clutch Selective Snap Ring Thicknesses	0.060-0.064, 0.074-0.078, 0.088-0.092, 0.102-0.106

① To check end play, exert force on checking tool to compress turbine to cover thrust washer wear plate. Set indicator at zero.

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SELECTIVE THRUST WASHERS

Identification No.	Thrust Washer Thickness – Inch		Identification No.	Thrust Washer Thickness – Inch
By Thickness	0.061–0.063		By Thickness	0.074–0.076
	0.067–0.069			0.081–0.083

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CLUTCH PLATES

Transmission Model	FORWARD CLUTCH				REAR CLUTCH		
	Steel Plates	Friction Plates	Selective Plate Thicknesses	Selective Plate Identification	Steel Plates	Friction Plates	Free Pack Clearance
PHB, PHD	4	5①	0.0565-0.0605 0.0705-0.0745 0.0845-0.0885 0.0985-0.1025	No Stripe One Stripe Two Stripes Three Stripes	4②	4	0.030-0.055
PHA	3	4			3	3	

① Last plate (Friction) in FMX forward clutch is selective. Install thickest plate in pack that will be a minimum of 0.010 inch below input shaft shoulder in cylinder. All other friction plates in pack are thinnest available.
② Plus one waved plate installed next to piston.

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CONTROL VALVE SPRING IDENTIFICATION

Spring		Total Coils	Free Length (Inches)	Spring Dia. O.D. (Inches)	Wire Dia. (Inches)	Length at Lbs. Load		Spring Color Code
						Load	Length	
1-2 Shift Accumulator Valve	Model PHB-P, R, S	8.5	1.170	0.470	0.035	2.900	0.445	Yellow
	Model PHD, PHA	9	1.260	0.470	0.038	4.250	0.445	None
	Model PHB-E1, L1, V	8.5	0.92	0.470	0.035	1.900	0.445	None
1st-2nd Shift Control Valve		7	1.880	0.725	0.044	4.600	0.560	White
Throttle Press. Booster Valve:	Model PHB-A, PHD	15.5	1.980	0.470	0.047	6.650	0.890	Blue
	Model PHB-C,D,E,F,G,H	15.5	1.660	0.470	0.047	5.250	0.890	Green
2-1 Scheduling Valve:	Model PHB, PHA	11	0.880	0.265	0.026	2.400	0.415	Pink
	Model PHD	12	0.910	0.265	0.023	1.400	0.415	(2) Pink Stripes
Low Inhibitor Valve:	Model PHB, PHD, PHA	17	1.270	0.230	0.025	1.900	0.890	Yellow
Control Oil Press. Comp. Valve-Outer:	Model PHB-E1,L1,V,PHA	8	1.640	0.509 I.D.	0.038	3.200	0.500	White
	Model PHD	9	1.650	0.509 I.D.	0.035	2.400	0.500	Pink
	Model PHB-P,R,S	7	1.09	0.509 I.D.	0.034	1.520	0.500	Purple
Control Oil Press. Comp. Valve-Inner:	Model PHB-E1,L1,V,PHA	13.5	1.620	0.310 I.D.	0.023	1.100	0.460	Pink
	Model PHD	13.5	1.230	0.310 I.D.	0.030	2.000	0.460	Blue
	Model-PHB-P,R,S	10	1.00	0.390	0.034	2.720	0.520	None
Downshift Valve		13.5	1.107	0.250	0.023	1.400	0.640	None
Control Check Valve		12	0.480	0.214	0.014	0.100	0.280	None
3rd-2nd Downshift Control Valve		14.5	0.820	0.200	0.018	0.605	0.520	Purple
Transition Valve	Model PHA, PHD	8	1.600	0.470 I.D.	0.031	2.000	0.460	Lt. Blue
	Model PHB	7	1.320	0.470 I.D.	0.035	2.750	0.460	Orange
2nd-3rd Shift Valve – Inner		21	1.340	0.295	0.028	1.500	0.670	Green
2nd-3rd Shift Valve – Outer		4	1.008	0.692 I.D.	0.041	2.950	0.430	White
Low Servo Modulator Valve		29.5	1.800	0.235	0.028	2.975	1.050	None

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SHIFT SPEED, ACTUAL MPH

FORD, METEOR, POLICE AND TAXI WITH 240-1V ENGINE

Throttle	Range	Shift	1	2	3	4	5
Closed	D	1-2	9-13	9-14	10-14	11-15	11-16
(Above	D	2-3	10-21	10-22	11-23	12-24	13-25
17"	D	3-1	5-9	5-10	5-10	6-11	6-11
Vacuum)	1	2-1	19-25	20-27	21-29	23-30	24-31
To Detent	D	1-2	19-33	20-35	20-37	22-39	23-40
•(Torque	D	2-3	32-50	33-53	35-56	38-59	40-61
Demand)	D	3-2	21-32	21-34	22-36	24-38	25-39
Through	D	1-2	35-43	36-46	38-49	41-51	43-53
Detent	D	2-3	54-64	53-70	59-74	64-78	73-81
(W.O.T.)	D	3-2	51-61	53-64	55-68	60-72	62-75
	D	3-1 or 2-1	25-32	26-34	27-36	30-38	31-40

Axle Ratio	Tire Size	Use Column No.
3.25:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15,	1
	8.55 x 15, H70 x 15, H78 x 15	2
3.07:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15,	2
	8.55 x 15, H70 x 15, H78 x 15	3
3.00:1	All	3
2.75:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15,	4
	8.55 x 15, H70 x 15, H78 x 15	5

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FORD, METEOR, POLICE AND TAXI WITH 302-2V ENGINE

Throttle	Range	Shift	1	2	3	4	5
Closed	D	1-2	9-14	9-14	10-15	11-16	11-16
(Above	D	2-3	10-23	10-24	11-25	11-27	12-27
17"	D	3-1	5-10	5-10	5-11	6-12	6-12
Vacuum)	1	2-1	20-28	21-30	22-32	24-34	25-35
To Detent	D	1-2	22-39	23-41	24-44	26-45	27-48
(Torque	D	2-3	38-59	40-62	41-66	44-70	47-72
Demand)	D	3-2	22-36	23-88	24-40	26-42	27-43
Through	D	1-2	38-48	40-50	42-53	45-56	47-58
Detent	D	2-3	60-75	63-77	65-81	70-86	75-89
(W.O.T.)	D	3-2	55-66	57-70	59-74	64-78	67-80
	D	3-1 or 2-1	20-28	21-30	22-32	24-33	25-35

Axle Ratio	Tire Size	Use Column No.
3.25:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15,	1
	8.55 x 15, H70 x 15, H78 x 15	2
3.07:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15	2
	8.55 x 15, H70 x 15, H78 x 15	3
3.00:1	All	3
2.75:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15	4
	8.55 x 15, H70 x 15, H78 x 15	5

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FORD AND METEOR WITH 351-2V ENGINE

Throttle	Range	Shift	1	2	3	4	5
Closed	D	1-2	9-10	9-11	10-12	11-12	11-12
(Above	D	2-3	10-23	10-24	11-25	12-27	12-27
17"	D	3-1	5-10	5-10	5-11	6-12	6-12
Vacuum)	1	2-1	29-37	30-40	32-42	34-44	36-46
To Detent	D	1-2	22-39	23-41	24-45	26-46	27-47
(Torque	D	2-3	38-59	40-63	42-66	45-70	47-72
Demand)	D	3-2	21-36	22-38	23-40	24-42	26-43
Through	D	1-2	35-45	37-47	38-50	41-53	43-55
Detent	D	2-3	56-69	59-72	61-77	65-81	69-84
(W.O.T.)	D	3-2	51-62	53-66	55-70	59-74	63-76
	D	3-1 or 2-1	24-34	25-36	27-37	28-40	30-41

Axle Ratio	Tire Size	Use Column No.
3.25:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15	1
	8.55 x 15, H70 x 15, H78 x 15	2
3.07:1	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15	2
	8.55 x 15, H70 x 15, H78 x 15	3
3.00:1	All	3
	7.75 x 15, 8.25 x 15, F78 x 15, G78 x 15	4
	8.55 x 15, H70 x 15, H78 x 15	5

CD2147-A

COUGAR WITH 351-2V ENGINE

Throttle	Range	Shift	1	2	3	4	5	6
Closed	D	1-2	7-8	7-8	8-9	9-10	10-11	10-12
(Above	D	2-3	8-18	8-18	9-20	10-21	11-23	12-25
17"	D	3-1	4-8	4-8	5-9	5-9	5-10	6-11
Vacuum)	1	2-1	21-27	23-30	26-33	28-35	30-38	33-42
To Detent	D	1-2	19-32	21-35	24-39	26-43	28-45	30-49
(Torque	D	2-3	33-47	36-52	40-58	43-62	46-68	51-74
Demand)	D	3-2	19-26	21-29	24-32	26-35	28-38	30-41
Through	D	1-2	25-33	28-36	31-40	34-43	36-47	40-50
Detent	D	2-3	40-50	44-55	50-61	53-66	58-71	63-77
(W.O.T.)	D	3-2	37-45	40-49	45-55	49-59	53-65	58-70
	D	3-1 or 2-1	18-24	19-27	22-30	23-32	25-35	28-38

Axle Ratio	Tire Size	Use Column No.
4.30:1	All	1
3.91:1	All	2
3.50:1	All	3
3.25:1	All	4
3.00:1	All	5
2.75:1	All	6

CD2148-A

FAIRLANE, MONTEGO, MUSTANG AND COUGAR WITH 351-4VGT ENGINE

Throttle	Range	Shift	1	2	3	4	5	6
Closed (Above 17" Vacuum)	D	1-2	7-10	7-11	8-13	9-14	10-15	10-16
	D	2-3	8-17	8-19	9-21	10-22	11-24	12-26
	D	3-1	4-7	4-8	4-9	5-10	5-10	5-11
	1	2-1	21-28	23-31	26-35	28-37	30-40	33-43
To Detent (Torque Demand)	D	1-2	23-35	26-39	29-43	31-47	33-50	36-54
	D	2-3	37-53	41-59	46-65	49-70	53-72	58-80
	D	3-2	17-28	19-31	21-35	22-37	24-40	27-43
Through Detent (W.O.T.)	D	1-2	31-38	34-43	38-47	41-50	45-55	49-58
	D	2-3	48-59	53-65	59-72	63-78	68-84	75-89
	D	3-2	43-52	47-58	52-64	56-69	61-75	62-79
	D	3-1 or 3-2	21-29	24-32	26-35	28-38	31-41	33-44

Axle Ratio	Tire Size	Use Column No.
4.30:1	All	1
3.91:1	All	2
3.50:1	All	3
3.25:1	All	4
3.00:1	All	5
2.75:1	All	6

CD2149-A

TORQUE LIMITS

Item	Ft-Lbs	Item	Ft-Lbs
Converter to Flywheel	23-28	Cooler Return Check Valve	9-12
Converter Hsg. to Trans. Case	40-50	Extension Assy. to Trans. Case	30-40
Front Pump to Trans. Case	17-22	Pressure Gauge Tap	7-15
Front Servo to Trans. Case	30-35	Converter Drain Plug	15-28
Rear Servo to Trans. Case	40-45	Rear Band Adjusting Screw to Case	35-40
Upper Valve Body to Lower Valve Body	4-6	Front Band Adjusting Screw Locknut	20-25
Oil Pan to Case	10-13	Manual Valve Inner Lever to Shaft	20-30
Converter Cover to Converter Hsg.	12-16	Downshift Lever to Shaft	17-20
Regulator to Case	17-22	Filler Tube to Engine	20-25
Planetary Support to Trans. Case	20-25	Transmission to Engine	40-50
Control Valve Body to Trans. Case	8-10	Neutral Start Switch Actuator Lever Bolt	6-10
Diaphragm Assy. to Case	20-30	Steering Col. Lock Rod Adj. Nut	10-20

Item	In-Lbs	Item	In-Lbs
Governor to Counterweight	50-60	Stator Support to Pump	23-35
Governor Valve Body Cover Screws	20-30	Stator Support to Pump	25-35
Pressure Regulator Cover Screws	20-30	Lower Body and Cover Plate to Valve Body	20-30
Control Valve Body Screws (10-24)	20-30	T.V. Body to Valve Body	20-30
Front Servo Release Piston	20-30	Lower Valve Body Cover and Plate to Valve Body	48-72
End Plates to Body	20-30		
① Mustang and Cougar Only			

CD2150-A

SPECIAL TOOLS

Ford Tool No.	Former No.	Description		Ford Tool No.	Former No.	Description
T50T-100-A and TOOL-1175-AB	1175-AE	Seal Remover		T61L-7657-A	7657-AA	Transmission Extension Housing Oil Seal Replacer
T65E-6000-J		Engine Support Bar		T61L-7657-B	7657-B	Transmission Extension Housing Oil Seal Replacer
TOOL-7000-DD	7000-DD	Air Nozzle Rubber Tip Assembly				
TOOL-7000-CJ	7000-CC 7000-CJ	Transmission Overhaul Holding Fixture		T57P-7697-A		Transmission Extension Housing Bushing Remover
T64L-7003-A		Automatic Transmission Bushing Kit Remover and Replacer		T57P-7697-B		Transmission Extension Housing Bushing Replacer
T68P-7D158		Seal Installer and Protector		TOOL-77067		Dial Indicator Support Fixture
T70P-7B200-A		Rear Band Torque Wrench		T65P-77370-A		Rear Band Torque Wrench
T70P-7B200-B		Rear Band Lock Nut Wrench		T65L-77515-A		Rear Clutch Spring Compressor
T58L-7195-A		Band Adjustment Wrench		TOOL-77530-A	77530-A	Clutch Assembly Fixture
TOOL-7225-C	7225-B	Front Band Adjustment Wrench		TOOL-77565	77530	Front Clutch Spring Compressor
TOOL-7225-C13-B	7225-C13-B	Gauge Block and Chain Assembly		T63L-77837-A	77837-A	Front Pump Seal Replacer

CD2151-A

PART 17-04 C-6 Automatic Transmission

1 DESCRIPTION

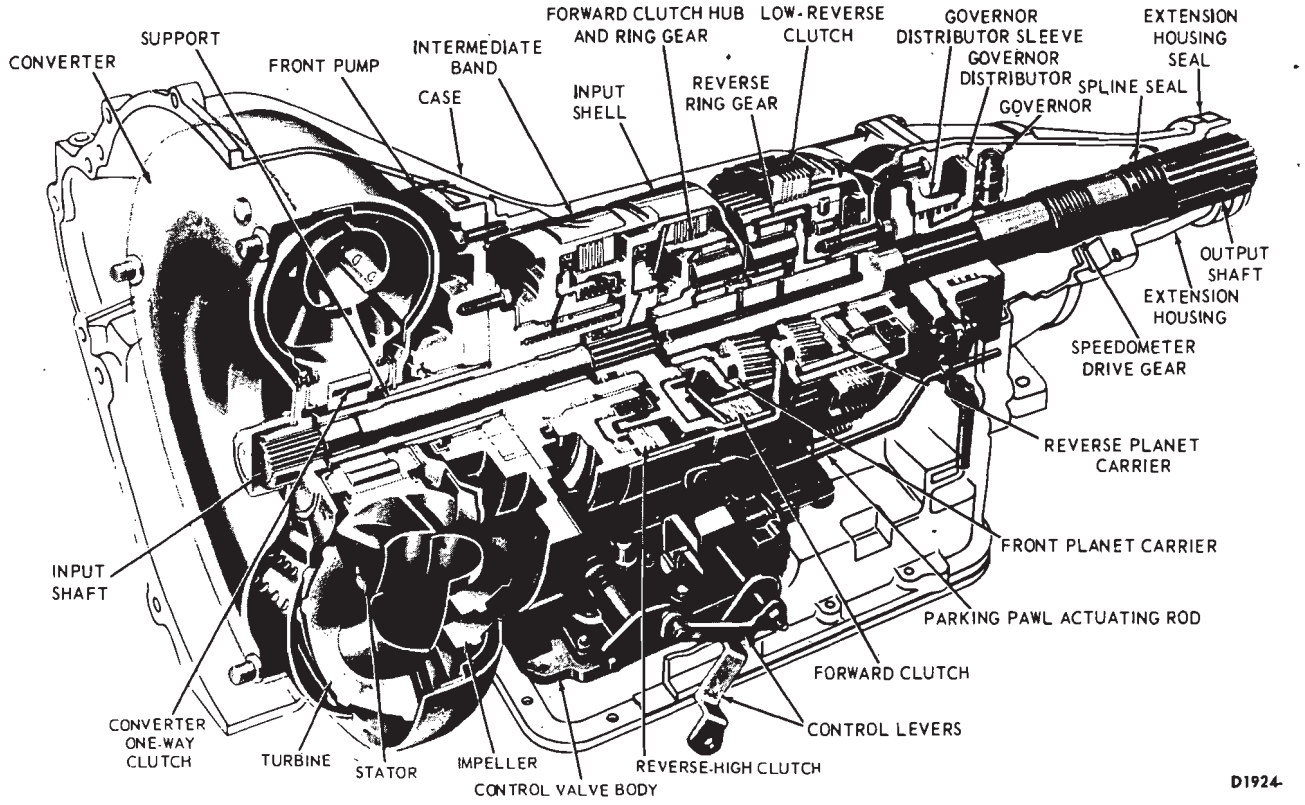

FIG. 1—C6 Automatic Transmission—Sectional

DESCRIPTION

Figure 1 shows the location of the converter, front pump, clutches, gear train and most of the internal parts used in the C6 transmission. The identification tag (Fig. 2), attached to the intermediate servo lower front cover bolt, includes the model prefix, suffix and serial number. The first line on the tag shows the transmission model prefix and suffix. A number appearing after the suffix (Fig. 2) indicates that the internal parts in the transmission have been changed after initial production start-up. For example, a PJD-B model transmission that has been changed internally would read PJD-B1. Both transmissions are basically the same, but some service parts in the PJD-B1 transmission are slightly different than the PJD-B transmission. Therefore, it is important that the codes on the transmission identification tag be checked when ordering parts or making inquiries about the transmission.

The C6 transmission is a three

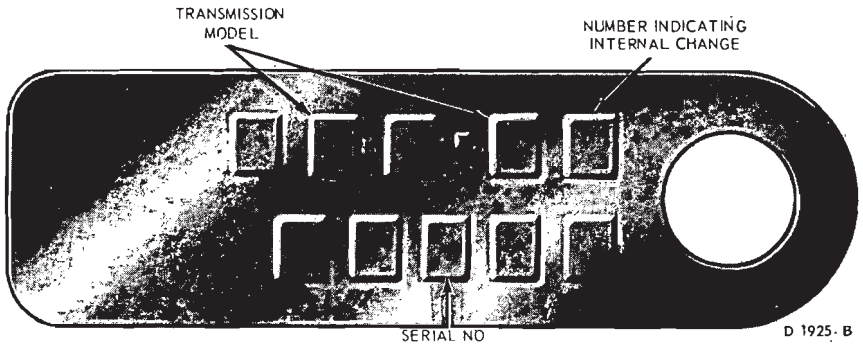

FIG. 2—Identification Tag

speed unit capable of providing automatic upshifts and downshifts through the three forward gear ratios, and also capable of providing manual selection of first and second gears. The hydraulic control system schematic is shown in Figure 3. The converter housing and the fixed splines which engage the splined OD of the low-reverse clutch steel plates, are both cast integrally into the case.

Only one (intermediate) band is used in the C6 transmission. This along with the forward clutch is used to obtain intermediate gear.

The only adjustment on the transmission proper is the intermediate band.

The fluid is drained from the transmission by loosening the pan bolts and allowing it to drain. Finally, to allow the pan to drain more thoroughly, remove all bolts except the two from the front.

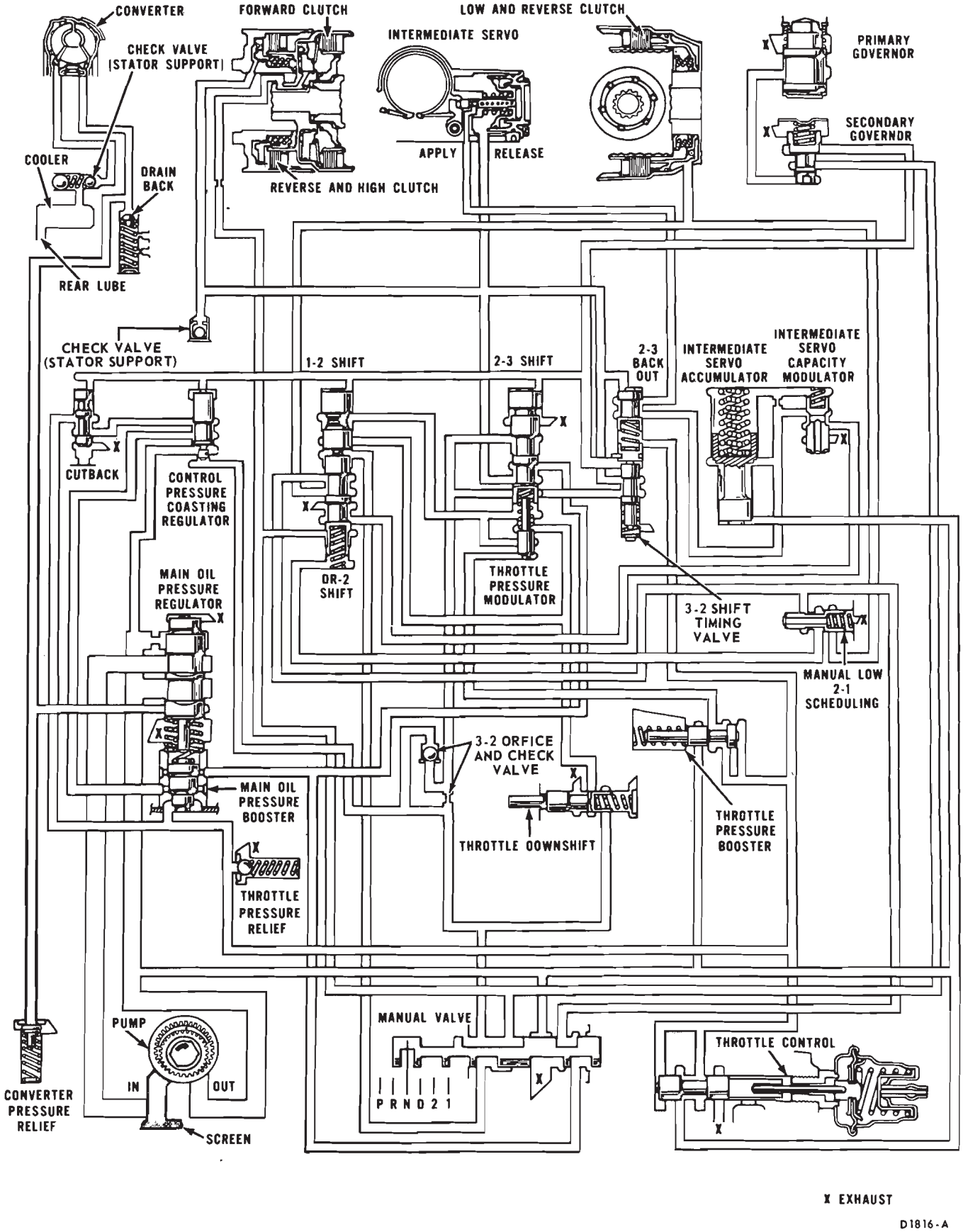

FIG. 3—Hydraulic Control System

2 IN-VEHICLE ADJUSTMENTS AND REPAIRS

CONTROL LINKAGE ADJUSTMENTS

The transmission control linkage adjustments should be performed in the order in which they appear in this section of the manual.

THROTTLE AND DOWNSHIFT LINKAGE ADJUSTMENTS

Adjusting the throttle linkage is important to be certain the throttle and downshift systems are properly adjusted. The downshift system should come in when the accelerator is pressed through detent, and not before detent. Refer to Group 23 for detailed throttle and downshift linkage adjustment procedures.

MANUAL LINKAGE ADJUSTMENT

Column Shift

1. Place the selector lever in the D position tight against the stop.
2. Loosen the shift rod adjusting nut at point A (Fig. 4, 5, 6 or 7).
3. Shift the manual lever at the transmission into the D detent position, third from the rear.
4. Make sure that the selector lever has not moved from the D stop; then, tighten the nut at point A to 10-20 ft-lbs.
5. Check the transmission operation for all selector lever detent positions.

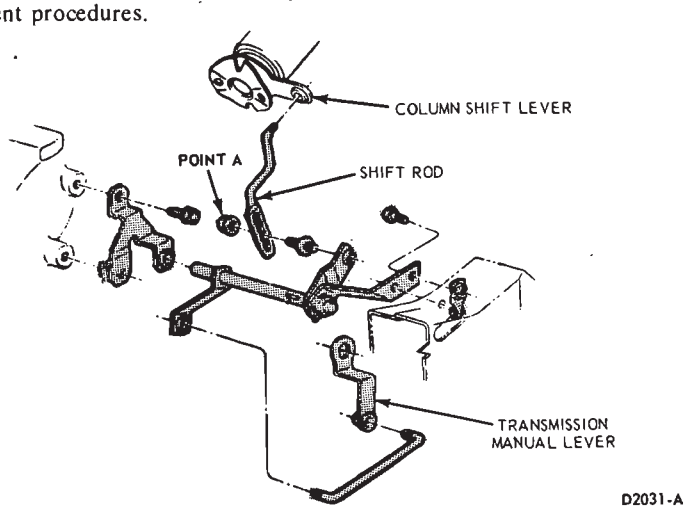

FIG. 4—Manual Linkage—Column Shift—Ford-Mercury-Meteor

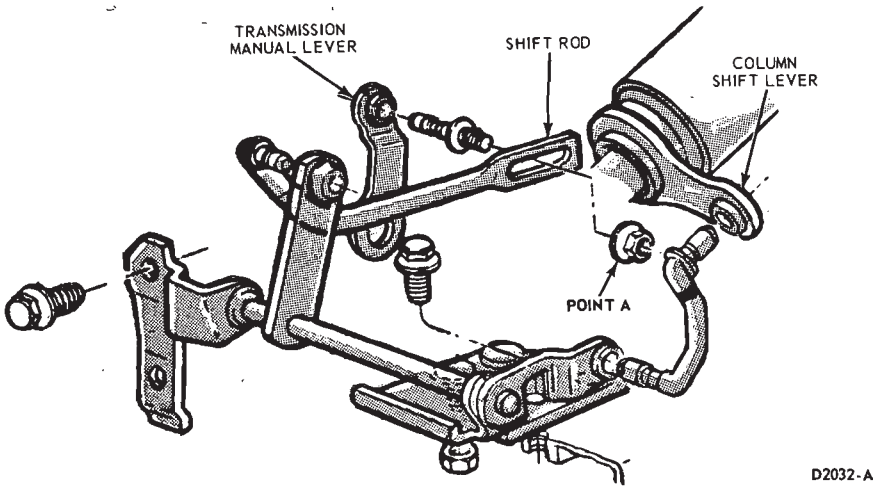

FIG. 5—Manual Linkage—Column Shift—Fairlane-Montego

Console or Floor Shift

1. Position the transmission selector lever in the D position.
2. Raise the vehicle and loosen the manual lever shift rod retaining nut (Fig. 8, 9 or 10). Move the transmission manual lever to the D position, third detent position from the back of the transmission.
3. With the transmission selector lever and manual lever in the D positions, torque the retaining nut 10 to 20 ft-lbs.
4. Check the operation of the transmission in each selector lever position.

LOCK ROD ADJUSTMENT (CONSOLE OR FLOOR SHIFT VEHICLES ONLY)

Before attempting to adjust the lock rod, be sure that the transmission manual linkage is properly adjusted.

1. Raise the vehicle and loosen the lock rod retaining nut (Fig. 8, 9 or 10).
2. Lower the vehicle and place the selector lever in the D position tight against the D stop.
3. Align the hole in the steering column socket casting with the column alignment mark and insert a 0.180 diameter gauge pin (No. 15 drill). The column casting must not rotate with the gauge pin in position.
4. Raise the vehicle and torque the lock rod retaining nut to 10-20 ft-lbs.
5. Lower the vehicle. Remove the gauge pin and check the linkage for proper operation.

NEUTRAL START SWITCH ADJUSTMENT—CONSOLE OR FLOOR SHIFT

FORD, MERCURY AND METEOR

1. With the manual linkage properly adjusted, check the starter engagement circuit in all positions. The circuit must be open in all drive positions and closed only in park and neutral.
2. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.
3. Remove the two screws from the rear of the console top panel. Pull the

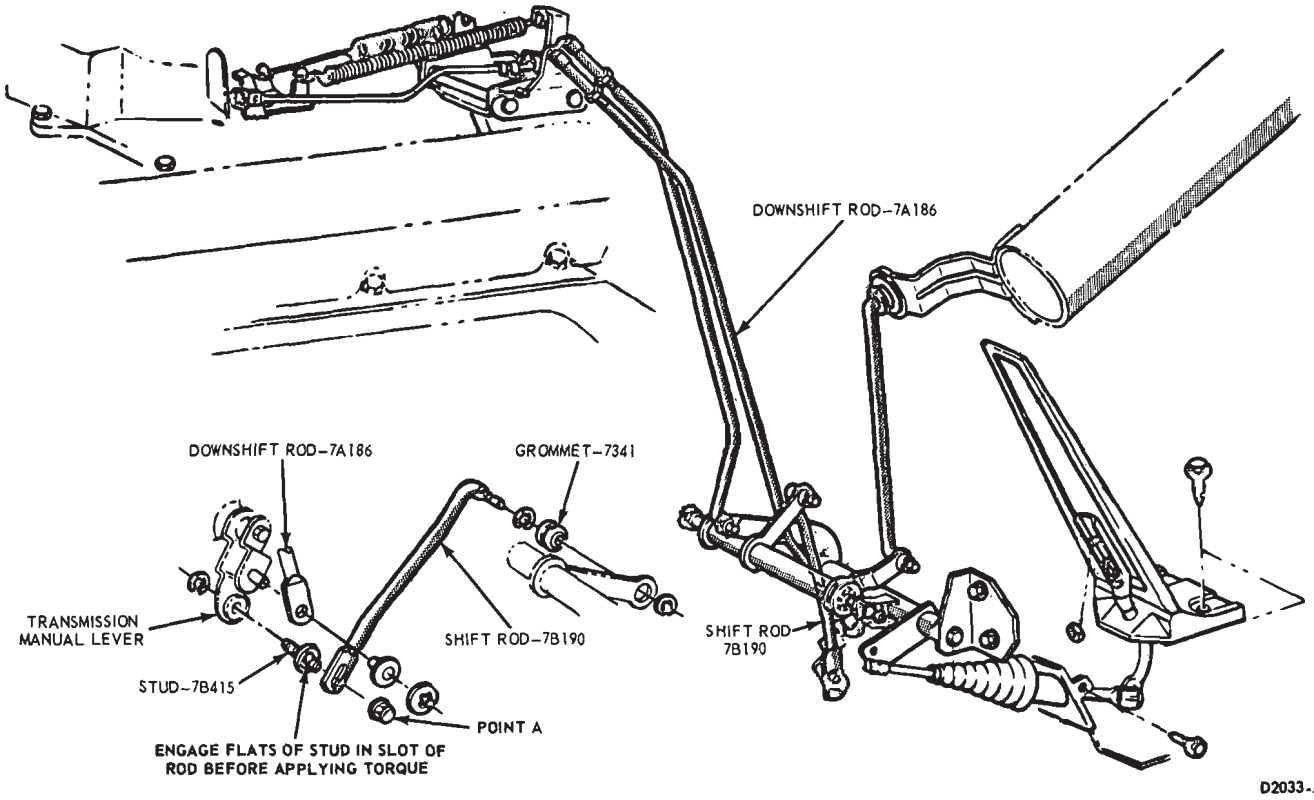

FIG. 6—Manual Linkage—Column Shift—Lincoln Continental

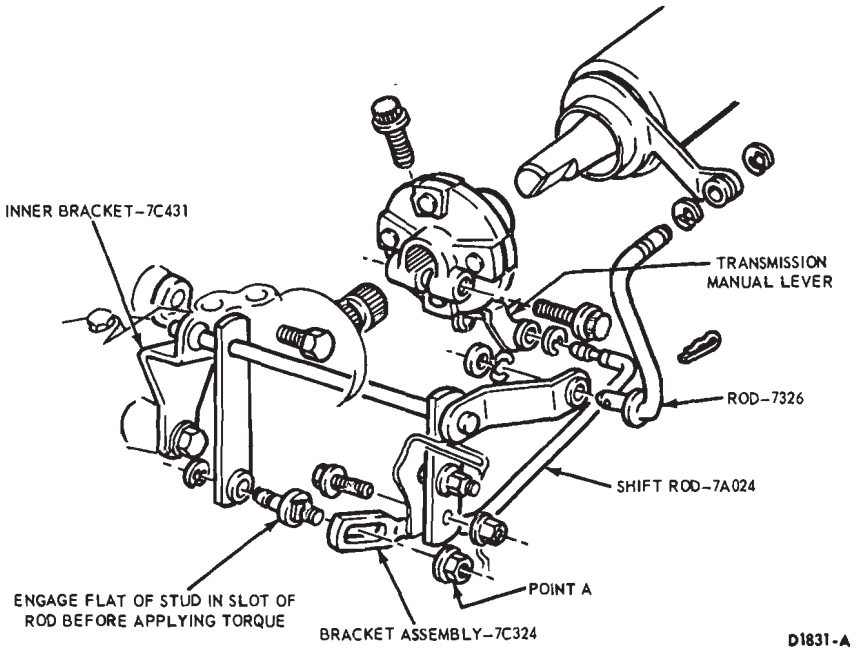

FIG. 7—Manual Linkage—Column Shift—Thunderbird-Continental Mark III

panel back to unhook it from the front of the console and remove the panel.

4. Loosen the two combination starter neutral and back-up light switch attaching screws (Fig. 11).

5. Move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 11).

6. Place the transmission selector lever firmly against the stop of the neutral detent position.

7. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch lever contacts the selector lever actuator. If an adjustment can not be made by rotating the switch, loosen the actuator lever attaching bolt and adjust the lever (Fig. 11).

8. Tighten the neutral start switch attaching screws. If the actuator lever was adjusted, tighten the actuator lever bolt.

9. Turn the ignition key to the ACC position and place the selector lever in the reverse position and check the operation of the back-up lights. Turn the key off.

10. Place the console top panel on the console and install the retaining screws.

11. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE-MONTEGO

1. With the manual linkage properly adjusted, check the starter engagement circuit in all positions. The circuit must be open in all drive posi-

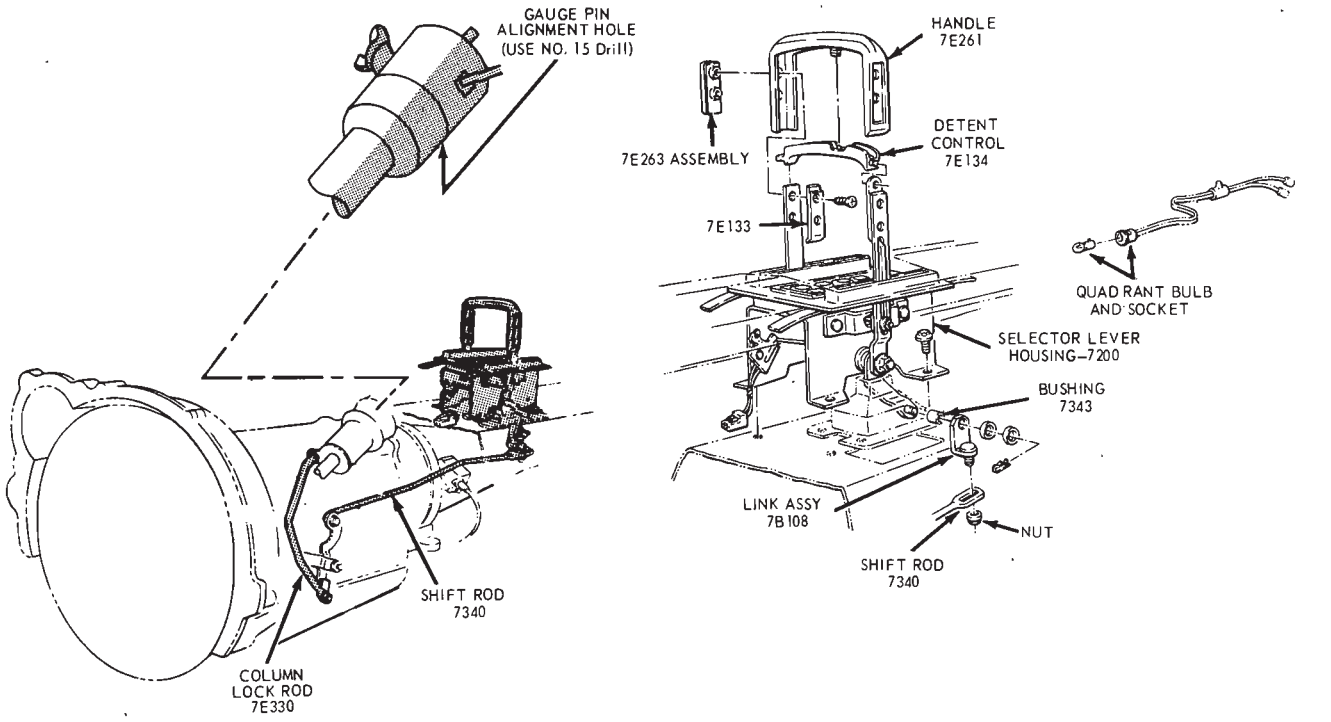

FIG. 8—Manual Linkage—Console or Floor Shift—Ford-Mercury-Meteor

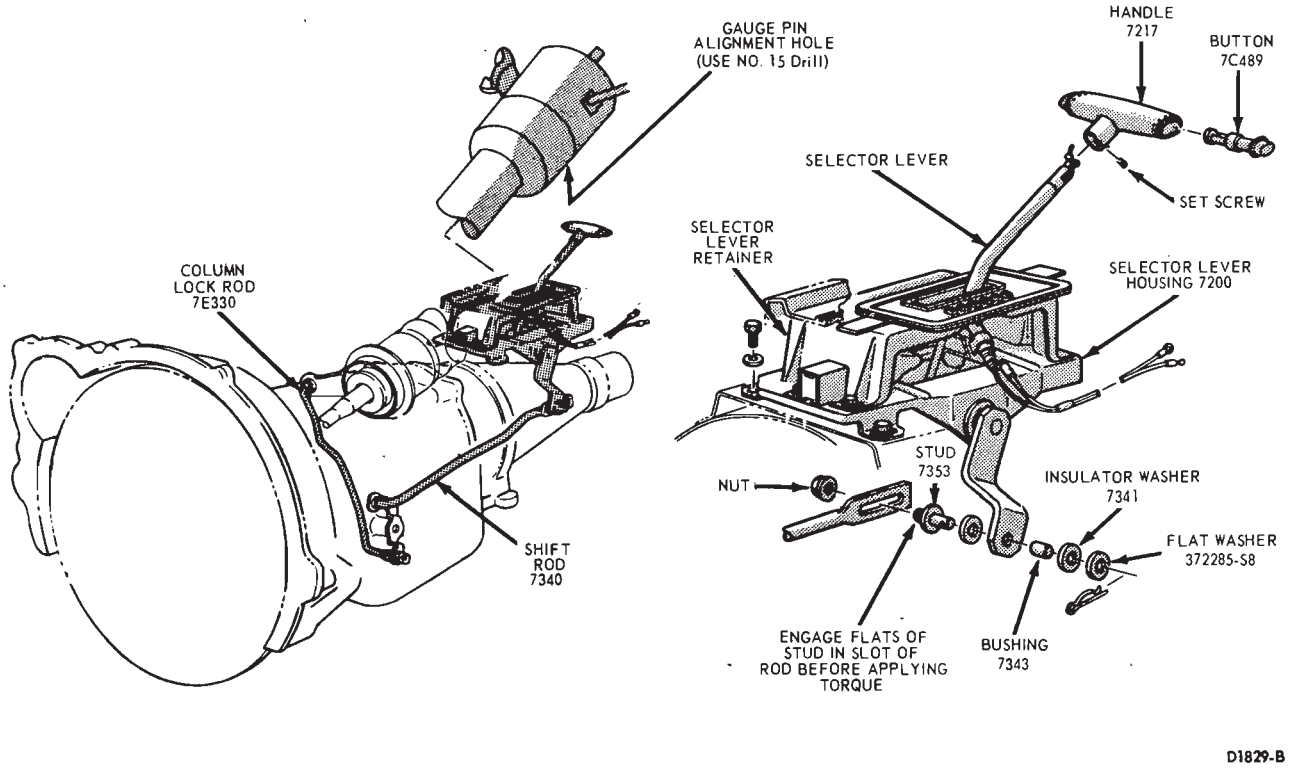

FIG. 9—Manual Linkage—Console or Floor Shift—Fairlane-Montego

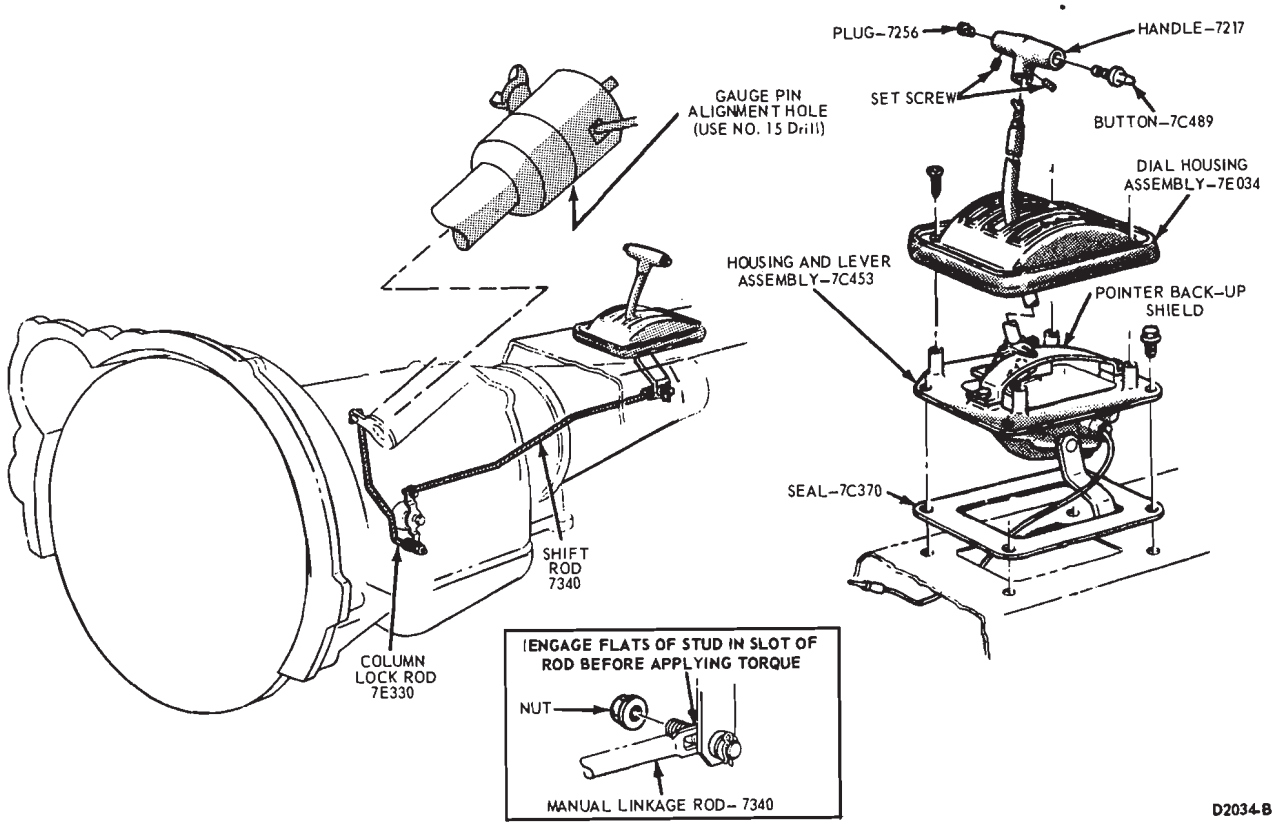

FIG. 10—Manual Linkage—Console or Floor Shift—Mustang-Cougar

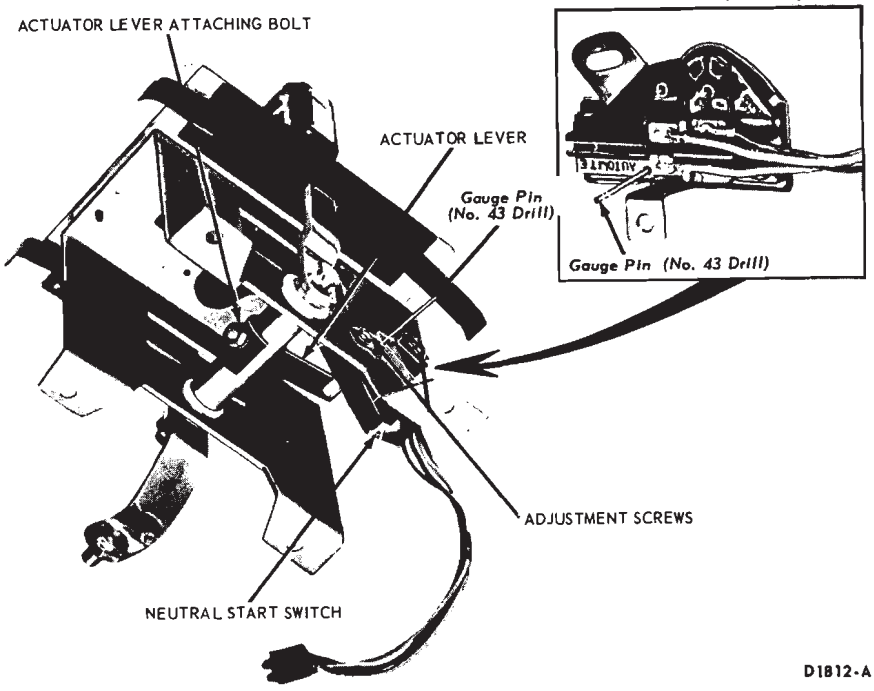

FIG. 11—Neutral Start Switch Adjustments—Console or Floor Shift—Ford-Mercury and Meteor

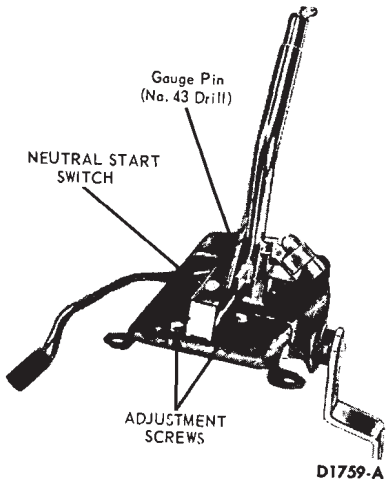

FIG. 12—Neutral Start Switch Adjustment—Console or Floor Shift—Fairlane-Montego

tions and closed only in park and neutral.

2. Remove the selector lever handle from the lever.

3. Remove the trim panel from the top of the console.

4. Remove the cover and dial indicator as an assembly.

5. Remove the six screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.

6. Loosen the two combination starter neutral and back-up light switch attaching screws (Fig. 12).

7. Move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 12).

8. Place the transmission selector lever firmly against the stop of the

neutral detent position.

9. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch actuating lever contacts the selector lever.

10. Tighten the switch attaching screws and remove the gauge pin. Check for starting in the park position.

11. Turn the ignition key to the ACC position and place the selector lever in the reverse position and check the operation of the back-up lights. Turn the key off.

12. Position the selector lever retainer to the selector lever housing. Install the six attaching screws.

13. Install the cover and dial indicator.

14. Install the trim panel on the top of the console. Install the selector lever handle.

MUSTANG AND COUGAR

1. **With the manual lever properly adjusted,** loosen the two switch attaching bolts (Fig. 13).

2. With the transmission manual lever in neutral, rotate the switch and insert the gauge pin (No. 43 drill shank end) into the gauge pin holes of the switch. **The gauge pin has to be inserted to a full 31/64 inch into the three holes of the switch (Fig. 13).**

3. Torque the two switch attaching bolts to specification. Remove the gauge pin from the switch.

4. Check the operation of the switch. The engine should start only with the transmission selector lever in Neutral and Park.

NEUTRAL START SWITCH REMOVAL AND INSTALLATION—CONSOLE OR FLOOR SHIFT

FORD, MERCURY AND METEOR

1. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.

2. Remove the two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the panel.

3. Remove the two screws securing the dial indicator assembly to the selector lever housing and remove the indicator assembly.

4. Disconnect the neutral start switch wires at the plug connector. Remove the wires from under the retaining clip.

5. Remove the two screws securing the neutral start switch to the selector lever housing and remove the switch (Fig. 11).

6. Position the neutral start switch to the selector lever housing and install the two attaching screws.

7. Adjust the neutral start switch as outlined under the Neutral Start Switch Adjustment procedures in this section.

8. Connect the neutral start switch wires to the plug connector. Position the wires in the retaining clip and close the clip.

9. Place the console top panel on the console and install the retaining screws.

10. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE AND MONTEGO

1. Remove the selector lever handle from the lever.

2. Remove the trim panel from the top of the console.

3. Remove the cover and dial indicator as an assembly.

4. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.

5. Remove the two screws securing the neutral start switch to the selector lever housing. Disconnect the neutral start switch wires at the plug connector and remove the switch.

6. Position the neutral start switch to the selector lever housing and install the two attaching screws.

7. With the selector lever in neutral, move the selector lever back and forth until the gauge pin (No. 43 drill) can be fully inserted into the gauge pin holes (Fig. 12).

8. Place the transmission selector lever firmly against the stop of the neutral detent position.

9. Slide the combination starter neutral and back-up light switch forward or rearward as required, until the switch actuating lever contacts the selector lever.

10. Tighten the switch attaching screws and remove the gauge pin.

11. Connect the neutral start switch wires to the plug connector and check for starting in the park position.

12. Position the selector lever retainer to the selector lever housing.

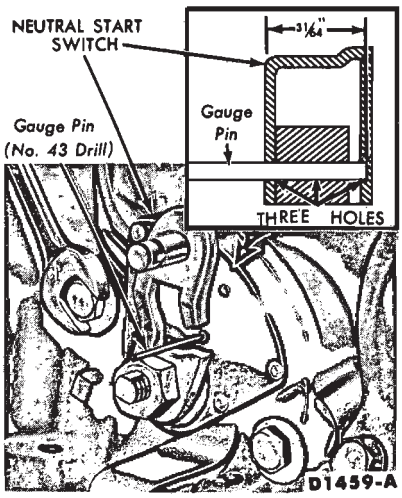

FIG. 13—Neutral Start Switch Adjustment—Console or Floor Shift—Mustang and Cougar

Install the attaching screws.

13. Install the cover and dial indicator.

14. Install the trim panel on the top of the console. Install the selector lever handle.

MUSTANG AND COUGAR

1. Remove the downshift linkage rod from the transmission downshift lever.

2. Apply penetrating oil to the downshift lever shaft and nut. Remove the transmission downshift outer lever retaining nut and lever (Fig. 13).

3. Remove the two neutral start switch attaching bolts.

4. Disconnect the multiple wire connector. Remove the neutral switch from the transmission.

5. Install the neutral start switch on the transmission. Install the two attaching bolts.

6. With the transmission manual lever in neutral, rotate the switch and install gauge pin (No. 43 drill) into the gauge pin hole (Fig. 13).

7. Tighten the switch attaching bolts to specification and remove the gauge pin.

8. Install the outer downshift lever and attaching nut, and torque the nut to specification. Install the downshift linkage rod to the downshift lever.

9. Install the switch wires. Connect the wire multiple connector. Check the operation of the switch in each detent position. The engine should start only with the transmission selector lever in N (neutral) and P (park).

SELECTOR LEVER REMOVAL AND INSTALLATION—CONSOLE OR FLOOR SHIFT

FORD, MERCURY AND METEOR

1. Raise the vehicle and disconnect the link assembly from the selector lever arm (Fig. 8).
2. Lower the vehicle. Remove the four screws and plates securing the selector lever handle to the lever. Remove the handle and detent control.
3. Remove the two screws from the rear of the console top panel. Pull the panel back to unhook it from the front of the console and remove the panel.
4. Disconnect the neutral start switch wires at the plug connector. Disconnect the bulb socket from the quadrant.
5. Remove the four bolts that attach the selector lever housing to the floor pan and remove the selector lever and housing.
6. Position the new selector lever and housing assembly on the floor pan and install the attaching bolts.
7. Connect the bulb socket to the quadrant and the neutral start switch wires to the plug connector.
8. Raise the vehicle and secure the link assembly to the selector lever arm with the bushing, insulator, flat washer and cotter pin (Fig. 8). Lower the vehicle.
9. Place the console top panel on the console and install the retaining screws.
10. Position the selector lever detent control and handle on the selector lever and secure with the four plates and attaching screws.

FAIRLANE AND MONTEGO

1. Raise the vehicle on a hoist or jack stands.
2. Remove the retainer that secures the manual linkage rod to the lower end of the manual lever (Fig. 9).
3. Remove the flat washer and two insulator washers and disconnect the rod from the arm.
4. Working from inside of the vehicle, remove the selector lever handle attaching screw. Lift the handle off the selector lever.
5. Remove the console trim panel from the top of the console. Remove the console retaining screws and remove the console.
6. Remove the cover and dial indicator as an assembly.

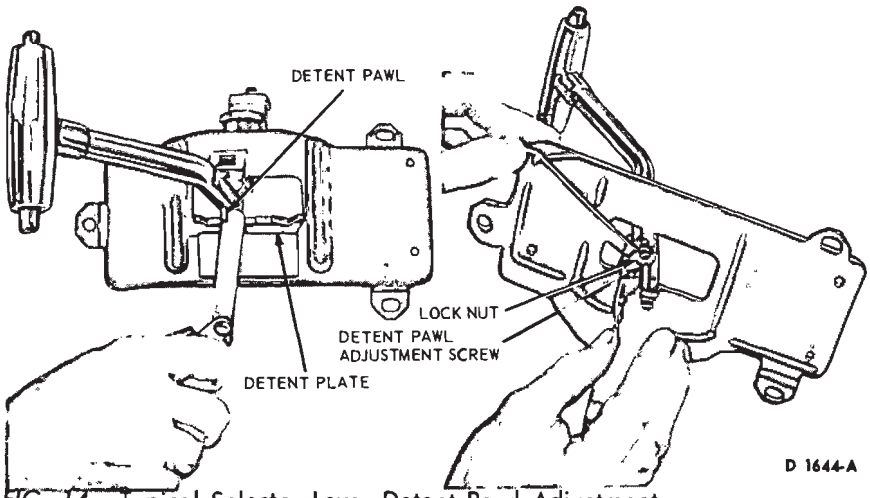

FIG. 14—Typical Selector Lever Detent Pawl Adjustment

7. Remove the four screws that secure the selector lever retainer to the selector lever housing. Lift the retainer from the housing.
8. Disconnect the neutral start switch wires at the plug connector. Disconnect the bulb socket from the selector lever housing.
9. Remove the three bolts that secure the selector lever control housing to the console. Lift the selector lever housing from the console.
10. Remove the selector lever to housing attaching nut. Remove the lever from the housing.
11. Install the selector lever in the housing and install the attaching nut. Torque the nut to 20 to 25 ft-lbs.
12. Install the selector lever handle.
13. Position the selector lever as shown in Figure 14. With a feeler gauge, check the clearance between the detent pawl and plate. The clearance should be 0.005 to 0.010 inch. If necessary adjust the height of the detent pawl as shown in Figure 14.
14. Remove the handle from the selector lever.
15. Position the selector lever housing in the console and install the three attaching bolts. Do not tighten the attaching bolts at this time.
16. Connect the bulb socket to the selector lever housing and the neutral start switch wires to the plug connector.
17. Position the selector lever retainer to the selector lever housing. Install the four attaching screws.
18. Install the cover and dial indicator.
19. Place the console in position and install the retaining bolts. Tighten the selector lever housing attaching bolts.
20. Position the console trim panel and secure it with the attaching screws.
21. Install the handle and the button on the selector lever. Secure the handle with the set screw.
22. Secure the manual linkage rod to the arm with two insulating washers, a flat washer and a retainer (Fig. 9).
23. Adjust the linkage as required. Lower the vehicle.

MUSTANG AND COUGAR

1. Raise the vehicle and remove the manual lever control rod attaching nut (Fig. 10).
2. Lower the vehicle, remove the selector lever handle attaching screw.
3. Remove the dial housing attaching screws and the housing.
4. Remove the pointer back-up shield attaching screws and remove the shield.
5. Disconnect the dial indicator light.
6. Remove the selector housing and lever assembly attaching bolts. Remove the selector lever and housing.
7. Remove the selector lever to housing attaching nut. Remove the lever from the housing.
8. Install the selector lever in the housing and install the attaching nut. Torque the nut to 20 to 25 ft-lbs.
9. Install the selector lever handle.
10. Position the selector lever as shown in Figure 14. With a feeler gauge check the clearance between the detent pawl and plate. The clearance should be 0.005 to 0.010 inch. If necessary adjust the height of the detent pawl as shown in Figure 14.
11. Remove the handle from the selector lever.
12. Install the selector housing and

lever assembly as shown in Figure 10. Torque the attaching bolts 4-6 ft-lbs.

13. Connect the dial indicator light.

14. Install the pointer back-up shield on the housing and lever assembly.

15. Install the dial housing and tighten the attaching screws.

16. Install the selector lever handle and tighten the attaching screw.

17. Position the selector lever in the D position.

18. Raise the vehicle. Install the transmission manual lever rod to the selector lever. Adjust the manual linkage.

19. Lower the vehicle and check the transmission operation in each selector lever detent position.

BAND ADJUSTMENT

INTERMEDIATE BAND

1. Raise the vehicle on a hoist or jack stands.

2. Clean all the dirt from the band adjusting screw area. Remove and discard the lock nut.

3. Install a new lock nut and tighten the adjusting screw to 10 ft-lbs torque (Fig. 15).

4. **Back off the adjusting screw exactly 1 full turn.**

5. Hold the adjusting screw from turning and torque the lock nut to specification.

6. Lower the vehicle.

EXTENSION HOUSING OR GOVERNOR REMOVAL AND INSTALLATION

REMOVAL

1. Raise the vehicle on a hoist or stands.

2. Disconnect the parking brake cable from the equalizer. On a Lincoln Continental, remove the equalizer.

3. Disconnect the driveshaft from the rear axle flange and remove it from the transmission.

4. Disconnect the speedometer cable from the extension housing.

5. Remove the engine rear support-to-extension housing attaching bolts.

On a Lincoln Continental, remove the reinforcement plate from under the transmission oil pan.

6. Place a jack under the transmission and raise it just enough to remove the weight from the engine rear support.

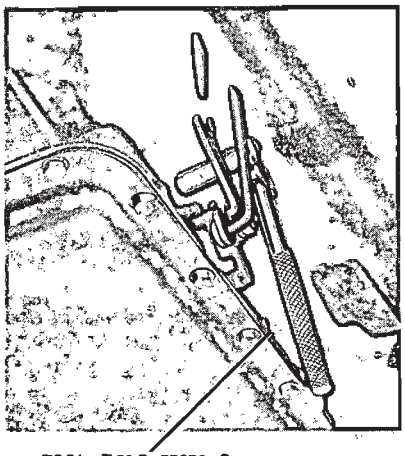

FIG. 15—Adjusting Band

7. Remove the bolt that secures the engine rear support to the crossmember and remove the support.

8. Place a drain pan under the rear of the transmission case.

9. Lower the transmission and remove the extension housing attaching bolts. Slide the extension housing off the output shaft and allow the fluid to drain.

10. Remove the governor attaching bolts (Fig. 16) and remove the governor from the flange.

INSTALLATION

1. Secure the governor (Fig. 16) to the distributor flange with the attaching bolts. Torque the bolts to specification.

2. Clean the mounting surface on the transmission and on the extension housing. Position a new gasket on the transmission.

3. Hold the extension housing in place and secure it with the attaching bolts.

4. Raise the transmission high enough to position the engine rear support on the crossmember.

5. Secure the support to the cross member with the attaching bolt and nut. Torque the bolt to specification.

6. Lower the transmission and remove the jack. Install and torque the engine rear support-to-extension housing attaching bolts to specification.

On a Lincoln Continental, install the reinforcement plate and secure it with the attaching bolts.

7. Secure the speedometer cable to the extension housing with the attaching bolt.

8. Connect the parking brake cable to the equalizer. On a Lincoln Continental, connect the parking brake equalizer. Adjust the parking brake as required.

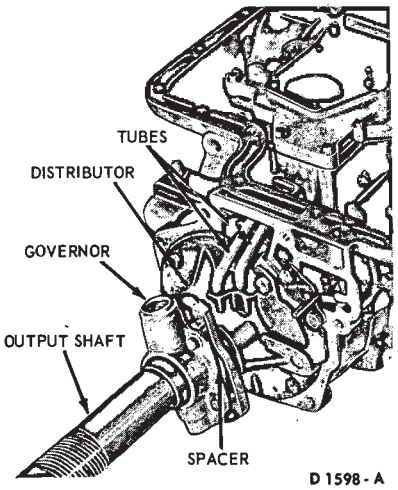

FIG. 16—Governor Installed

9. Install the drive shaft.

10. Fill the transmission to the correct level with the specified fluid.

SERVO REMOVAL AND INSTALLATION

ALL VEHICLES EXCEPT LINCOLN CONTINENTAL

Removal

1. Raise the vehicle on a hoist or stands.

2. Remove the engine rear support-to-extension housing attaching bolts.

3. Raise the transmission high enough to remove the weight from the engine rear support.

4. Remove the bolt that secures the engine rear support to the crossmember. Remove the support.

5. Lower the transmission and remove the jack.

6. Place a drain pan beneath the servo. Remove the bolts that attach the servo cover to the transmission case.

7. Remove the cover, piston, spring and gasket from the case, screwing the band adjusting screw inwards as the piston is removed. This insures that there will be enough tension on the band to keep the struts properly engaged in the band end notches while the piston is removed.

Seal Removal and Installation

1. Apply air pressure to the port in the servo cover to remove the piston

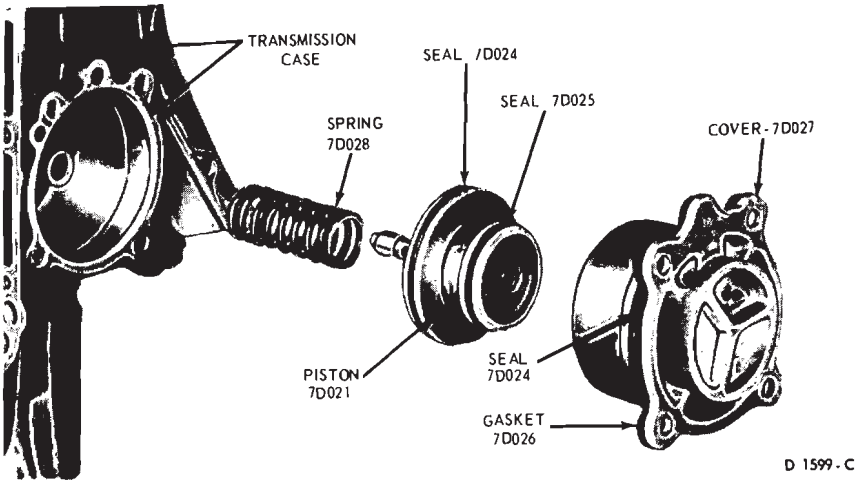

FIG. 17—Servo Disassembled—Typical

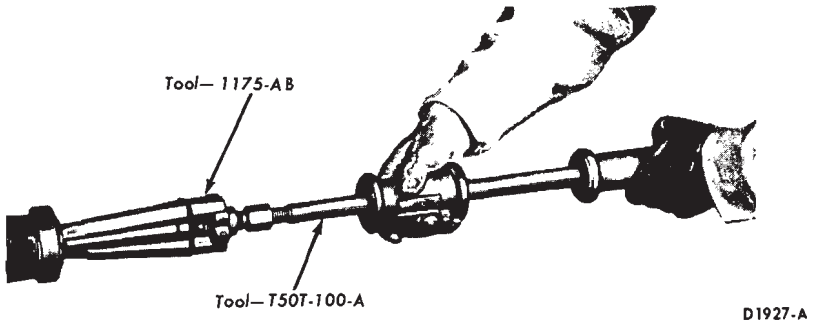

FIG. 18—Removing Extension Housing Seal

and rod.

2. Remove the seals from the piston (Fig. 17).

On a Continental Mark III, replace the complete piston and rod assembly if the piston or piston sealing lips are unserviceable or damaged.

3. Remove the seal from the cover.

4. Dip the new seals in transmission fluid.

5. Install the new seals on the piston and cover.

6. Coat two new gaskets with petroleum jelly and install the gaskets on the cover.

7. Dip the piston in transmission fluid and install it in the cover.

Installation

1. Position a new gasket on the servo cover.

2. Position the servo spring on the piston rod.

3. Insert the servo piston rod in the case. Secure the cover with the attaching bolts, taking care to back off the band adjusting screw as the cover bolts are tightened. Make sure that the vent tube retaining clip and service identification tag are in place.

4. Raise the transmission high enough to install the engine rear support. Secure the support to the extension housing with the attaching bolts. Lower the transmission as required to install the support to crossmember attaching bolt. Torque the attaching bolts to specification.

5. Remove the jack.

6. Adjust the band as detailed in Section 2.

7. Lower the vehicle and replenish the fluid as required.

LINCOLN

Removal

1. Raise the vehicle on a hoist.

2. Place a drain pan under the servo. Remove the bolts that attach the servo cover to the transmission case.

3. Remove the three bolts that attach the manual and downshift control rod splash shield to the frame side rail and remove the shield. Remove the reinforcement plate from under the transmission oil pan.

4. Loosen the band adjusting screw lock nut.

5. Remove the two nuts that attach the engine rear mounts to the crossmember.

6. Place a transmission jack under the transmission and raise it just high enough to remove the weight from the crossmember.

7. Remove the engine rear support-to-extension housing attaching bolts and remove the supports.

8. Remove the servo cover, piston, spring and gasket from the case, turning the band adjusting screw inward as the piston is removed. This insures that there will be enough tension on the band to keep the struts properly engaged in the band end notches while the piston is removed.

Seal Removal and Installation

1. Apply air pressure to the port in the servo cover to remove the piston and rod assembly. If the piston or piston sealing lips are unserviceable or damaged, the complete piston and rod assembly must be replaced.

2. Remove the seal from the cover (Fig. 17).

3. Dip the new seals in transmission fluid.

4. Install a new seal on the cover.

5. Dip the piston and rod assembly in transmission fluid and install it in the cover.

Installation

1. Coat two new gaskets with petroleum jelly and position them on the servo cover.

2. Position the servo spring on the piston rod.

3. Insert the servo piston rod in the case. Secure the cover with the attaching bolts taking care to back off the band adjusting screw as the cover bolts are tightened. Make sure that the transmission identification tag is installed under the lower front cover bolt.

4. Adjust the band as detailed in Section 2.

5. Raise the transmission high enough to install the engine rear supports. Secure the supports to the extension housing with the attaching bolts. Lower the transmission as required to install and torque the support-to-crossmember nuts.

6. Position the manual and downshift control rod splash shield to the frame side rail and secure it with the

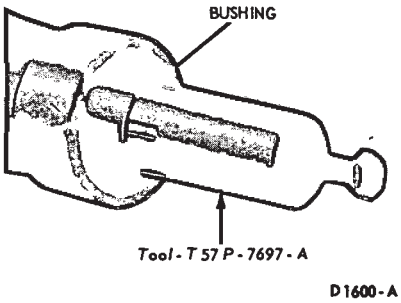

FIG. 19—Removing Extension Housing Bushing

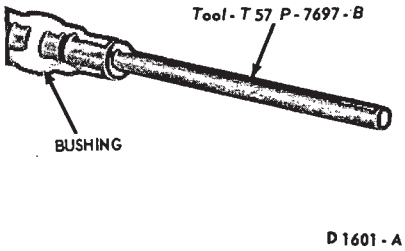

FIG. 20—Installing Extension Housing Bushing

attaching bolts.

7. Remove the jack.

8. Install the reinforcement plate and secure it with the attaching bolts.

9. Lower the vehicle and replenish the fluid as required.

OIL PAN AND CONTROL VALVE BODY REMOVAL AND INSTALLATION

REMOVAL

1. Raise the vehicle on a hoist or jack stands.

2. Place a drain pan under the transmission and loosen the bolts to drain the fluid from the transmission.

3. Remove the transmission pan at taching bolts from both sides and the rear to allow the fluid to drain further. Finally, remove the remainder of the attaching bolts. Remove the pan and gasket. Remove and discard the nylon shipping plug from the filler tube hole. This plug is used to retain transmission fluid within the transmission during shipment and should be discarded when the oil pan is removed.

4. Remove the valve body attaching bolts and remove the valve body from the case.

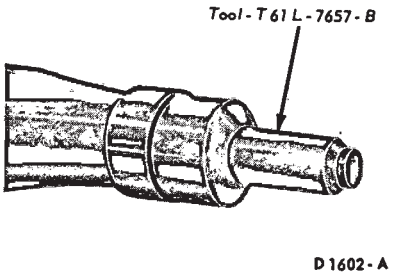

FIG. 21—Installing Extension Housing Seal

INSTALLATION

1. Position the valve body to the case making sure that the selector and downshift levers are engaged, then install and torque the attaching bolts to specification.

2. Clean the fluid pan and gasket surfaces thoroughly.

3. Using a new pan gasket, secure the pan to the transmission case and torque the attaching bolts to specification.

4. Lower the vehicle and fill the transmission to the correct level with the specified fluid.

EXTENSION HOUSING BUSHING AND REAR SEAL REMOVAL AND INSTALLATION

1. Disconnect the drive shaft from the transmission.

2. On a Lincoln Continental, remove the parking brake equalizer. Position the equalizer and cables out of the way to obtain free access to the transmission extension housing.

3. When only the rear seal needs replacing, carefully remove it with a tapered chisel or the tools shown in Fig. 18. Remove the bushing as shown in Fig. 19. **Use the bushing remover carefully so that the spline seal is not damaged.**

4. When installing a new bushing use the special tool shown in Fig. 20.

5. Before installing a new seal, inspect the sealing surface of the universal joint yoke for scores. If scores are found, replace the yoke.

6. Inspect the counterbore of the housing for burrs and if present, remove with crocus cloth.

7. Install the seal into the housing with the tool shown in Fig. 21. The seal should be firmly seated in the bore. Coat the inside diameter of the fiber portion of the seal with C1AZ-19590-B lubricant.

8. Coat the front universal joint spline with C1AZ-19590-B lubricant and install the drive shaft.

9. On a Lincoln Continental, connect the parking brake equalizer.

3 REMOVAL AND INSTALLATION

An oil impregnated plastic grommet is incorporated in the end of the manual shift linkage lever arm on all column shift vehicles. A special tool T67P-7341-A is required to install the grommet in the manual lever, and to install the manual linkage rod into the grommet. Refer to Part 17-01, Section 2, for the grommet replacement procedures.

REMOVAL—FORD MERCURY AND METEOR

1. Raise the vehicle on a hoist or stands. Drain the fluid from the transmission and from the converter.

2. Disconnect the drive shaft from the rear axle and slide the shaft rearward from the transmission. Install a seal installation tool in the extension housing to prevent fluid leakage.

3. Disconnect the cable from the terminal on the starter motor. Remove the three attaching bolts and remove the starter motor.

4. Remove the four converter-to-flywheel attaching nuts. Place a wrench on the crankshaft pulley attaching bolt to turn the converter to gain access to the nuts.

5. Remove the rear mount to crossmember attaching bolt.

6. Remove the two crossmember-to-frame attaching bolts.
7. Remove the two engine rear support-to-extension housing attaching bolts.
8. Disconnect the downshift rod from the transmission downshift lever.
9. Disconnect the manual linkage rod from the lever at the transmission.

On console and floor shift vehicles, disconnect the column lock rod at the transmission.

10. Remove the two bolts securing the bellcrank bracket to the converter housing.
11. Raise the transmission with a transmission jack to provide clearance to remove the crossmember.
12. Remove the rear mount from the crossmember and remove the crossmember from the side supports.
13. Lower the transmission to gain access to the oil cooler lines.
14. Disconnect each oil line from the fittings on the transmission.
15. Disconnect the vacuum line from the diaphragm located at the right rear of the transmission. Remove the metal line from the retaining clip on the transmission.
16. Disconnect the speedometer cable from the extension housing.
17. Remove the bolt that secures the transmission fluid filler tube to the cylinder block. Lift the filler tube and the dipstick from the transmission.
18. Secure the transmission to the jack with the chain.
19. Remove the converter housing-to-cylinder block attaching bolts.
20. Carefully move the transmission away from the engine and, at the same time, lower it to clear the underside of the vehicle.
21. Remove the converter and mount the transmission in a holding fixture.

INSTALLATION—FORD MERCURY AND METEOR

1. Torque the converter drain plug to specification.
2. Install the converter on the stator support.
3. Secure the transmission to the jack with the chain.
4. Rotate the flywheel to place two converter mounting stud holes that are adjacent to the drain plug hole in a vertical position.
5. Rotate the converter so that the studs and drain plug are in alignment with those in the flywheel.
6. Move the transmission toward the cylinder block until they are in contact. Install and torque the attaching bolts to specification making sure that the vacuum tube retaining clips are properly positioned.

On PGB-F3 models, it will be necessary to install hardened steel washers (Part No. 383058-S) on each of the converter-to-engine attaching bolts. Be sure the hardened washers are positioned between the lock washers and the converter housing.

7. Remove the transmission jack chain from around the transmission.
8. Install a new O-ring on the lower end of the transmission filler tube. Insert the tube in the transmission case and secure the tube to the engine with the attaching bolt.
9. Connect the speedometer cable to the extension housing.
10. Connect the oil cooler lines to the right side of transmission case.
11. Connect the vacuum line to the vacuum diaphragm making sure that the metal tube is secured in the retaining clip.
12. Position the cross member on the side supports. Position the rear mount on the crossmember and install the attaching bolt and nut.
13. Secure the engine rear support to the extension housing and torque the bolts to specification.
14. Lower the transmission and remove the jack.
15. Secure the crossmember to the side supports with the attaching bolts and torque them to specification.
16. Position the bellcrank bracket to the converter housing and install the two attaching bolts.
17. Connect the downshift rod to the transmission downshift lever.
18. Connect the selector rod to the manual lever at the transmission.

Connect the column lock rod on console and floor shift vehicles.

19. Secure the converter-to-flywheel attaching nuts and torque them to specification. Use a wrench on the crankshaft pulley attaching nut to rotate the flywheel. Do not use a wrench on the converter attaching nuts to rotate it.
20. Install the converter housing dust shield and secure it with the attaching bolts.
21. Secure the starter motor in place with the attaching bolts. Connect the cable to the terminal on the starter.
22. Install the driveshaft.
23. Adjust the shift linkage as detailed in Section 2.
24. Lower the vehicle.
25. Fill the transmission to the correct level with the specified lubricant. Start the engine and shift the transmission to all ranges, then recheck the fluid level.

REMOVAL—FAIRLANE, MONTEGO, MUSTANG AND COUGAR

1. On Mustang and Cougar, disconnect the neutral switch wires from the harness connector and the retaining clip on the dash.
2. Remove the bolt that secures the filler tube to the rear of the right cylinder head.
3. Raise the vehicle on a hoist or jack stands.
4. Remove the converter drain plug access cover from the lower end of the converter housing.
5. Place a drain pan under the converter housing and remove the converter drain plug. Install the plug after the fluid has drained.
6. Place the drain pan under the transmission fluid pan. Starting at the rear of the pan and working toward the front, loosen the attaching bolts and allow the fluid to drain. Finally remove all of the pan attaching bolts except two at the front, to allow the fluid to further drain. After the fluid has drained, install two bolts on the rear side of the pan to temporarily hold it in place.
7. Disconnect the drive shaft from the rear axle flange and remove it from the transmission. Install tool T61L-7657-A in the rear of the extension housing to prevent the fluid from leaking.
8. Disconnect the downshift rod from the transmission downshift lever.
9. Disconnect the shift rod from the manual lever.

On console and floor shift vehicles, disconnect the column lock rod at the transmission.

10. Disconnect the speedometer cable from the extension housing.
11. Disconnect the rubber hose from the vacuum diaphragm at the rear of the transmission. Remove the vacuum tube from the retaining clip at the transmission.
12. Disconnect the starter cable from the terminal on the starter. Remove the starter attaching bolts and remove it from the housing.
13. Lift the fluid filler tube from the transmission case.
14. Remove the four converter-to-flywheel attaching nuts.
15. On a Mustang or Cougar, disconnect the complete exhaust system and allow it to hang on the rear axle.

16. Remove the two nuts that attach the engine rear support to the crossmember.
17. Raise the transmission with a jack just enough to remove the weight from the crossmember.
18. Remove the cotter pins from the crossmember-to-frame side support attaching nuts and remove the nuts. Lift the crossmember from the frame side supports.
19. Remove the bolts that attach the engine rear support to the extension housing and remove the support.
20. Lower the transmission, then disconnect the fluid cooler lines from the transmission case.
21. Secure the transmission to the jack with a chain.
22. Remove the six bolts that attach the converter housing to the cylinder block.
23. Move the jack rearward until the transmission clears the engine, then tip it forward to provide clearance. Lower the transmission and remove it from under the vehicle.
24. Remove the converter from the transmission. Mount the transmission in a holding fixture if repairs are necessary.

INSTALLATION—FAIRLANE, MONTEGO, MUSTANG AND COUGAR

1. Mount the transmission in a transmission jack and secure it with a safety chain.
2. Install the converter on the front pump.
3. Rotate the flywheel as required to align the drain plug hole with the drain plug in the converter.
4. Roll the transmission into position under the vehicle and raise it to alignment with the engine. Move it forward until the converter housing contacts the cylinder block. Install and torque the converter-to-cylinder block attaching bolts.

On PGB-AF2, PJC-E, F and PJB-J models, it will be necessary to install hardened steel washers (Part No. 383058-S) on each of the converter-to-engine attaching bolts. Be sure the hardened washers are positioned between the lock washers and the converter housing.

5. Remove the jack safety chain from the transmission.
6. Connect the two fluid cooler lines to the fittings in the transmission case.
7. Secure the engine rear support to the extension housing with the attaching bolts. Torque the bolts to specification.
8. Position the crossmember on the frame side supports and install and tighten the attaching nuts to specification. Install cotter pins to retain the nuts.
9. Remove the transmission jack from under the vehicle. Install and torque the engine rear support-to-crossmember attaching nuts.
10. Install the exhaust system on Mustang and Cougar.
11. Install the converter-to-flywheel attaching nuts and torque them to specifications. Tighten the drain plugs to specification.
12. Secure the converter drain plug access cover to the lower end of the converter housing with the attaching bolts.
13. Install a new O-ring on the lower end of the fluid filler tube. Dip the O-ring in clean automatic transmission fluid and insert the filler tube in the transmission case.
14. Secure the starter to the converter housing. Connect the cable to the terminal on the starter.
15. Connect the speedometer cable to the extension housing.
16. Connect the shift rod to the manual lever at the transmission.

Connect the column lock rod on console and floor shift vehicles.

17. Connect the downshift rod to the lever on the transmission.
18. Remove the tool from the extension housing and install the drive shaft.
19. Lower the vehicle.
20. Working from the engine compartment, secure the fluid filler tube to the rear of the right cylinder head with the attaching bolt.
21. On Mustang and Cougar, connect the neutral switch wires to the harness. Secure the wires to the dash with the retaining clip.
22. Fill the transmission with the specified lubricant as detailed in Part 17-01.

REMOVAL—THUNDERBIRD

1. Working from the engine compartment, remove the fluid filler tube bracket attaching screw that secures it to the rear of the right cylinder head. Lift the tube and dipstick from the transmission.
2. Remove the starting motor upper attaching bolt using a long extension.
3. Remove the two converter housing upper attaching bolts.
4. Raise the vehicle on a hoist or stands.
5. Remove the dust shield from the front lower end of the converter housing.
6. Crank the engine until the converter drain plug is accessible. Then, remove the plug. Place a drain pan under the converter to catch the fluid.
7. Remove the drive shaft.
8. Remove the frame side rail support brace attaching bolts and remove the brace.
9. After the fluid has been drained from the converter, install the plug.
10. Place the drain pan under the transmission pan and loosen the attaching bolts and allow the fluid to drain. Finally remove all of the pan attaching bolts except two, to allow the oil to further drain. After the fluid has drained, install two bolts on the opposite side of the pan to temporarily hold it in place.
11. Remove the converter-to-flywheel attaching nuts.
12. Disconnect the downshift linkage from the transmission downshift lever.
13. Remove the selector rod from the manual lever.
14. Remove the two screws that attach the shift rod bellcrank bracket to the converter housing and remove the bracket.
15. Disconnect the vacuum diaphragm hose from the upper end of the vacuum tube.
16. Disconnect the speedometer cable from the extension housing and place it to one side.
17. Remove the starting motor two lower attaching bolts and place the motor to one side.
18. Disconnect the two oil cooler lines from the right side of the transmission.
19. Disconnect the muffler inlet pipes at the exhaust manifolds and allow the pipes to hang.
20. Remove the vibration absorber from the extension housing.
21. Remove the two engine rear support-to-extension housing attaching bolts.
22. Place a transmission jack under the transmission and raise it just enough to remove the weight from the support.
23. Remove the two support attaching bolts and remove the support.
24. Lower the jack just enough to remove the weight.
25. Remove the four remaining converter housing-to-cylinder block attaching bolts and the accelerator linkage stop from the left side of the housing.
26. Carefully lower the transmis-

sion and remove it from under the vehicle.

27. Remove the converter and mount the transmission in a holding fixture.

INSTALLATION— THUNDERBIRD

1. Troque the converter drain plug to specification.
2. Install the converter on the stator support.
3. Secure the transmission on a transmission jack.
4. Rotate the converter so that the studs and drain plug are in alignment with their holes in the flywheel.
5. Move the transmission toward the cylinder block until they contact each other. Install and torque the attaching bolts to specification. Before tightening the center bolt on the left side, make sure that the accelerator linkage stop bracket is properly positioned so that the left upper bolt may be installed later.
6. Connect the fluid cooler lines to their fittings on the right side of the transmission.
7. Raise the transmission and install the engine rear support and torque the bolts to specification. Make sure that the hand brake equalizer is positioned properly.
8. Lower the transmission and remove the jack.
9. Install the engine rear support-to-extension housing attaching bolts.
10. Install the drive shaft.
11. Connect the speedometer cable to the extension housing.
12. Position the starting motor on the converter housing and secure it with the two lower bolts.
13. Install the torque converter-to-flywheel attaching nuts and torque them to specification.
14. Install the converter housing dust shield.
15. Secure the frame side rail support brace with the attaching bolts and lock washers. Torque the bolts to specification.
16. Connect the downshift rod to the transmission downshift lever.
17. Connect the manual selector rod to the manual lever.
18. Connect the vacuum diaphragm hose to the upper end of the vacuum tube.
19. Position the vibration absorber to the transmission extension housing and secure it with the three attaching bolts.
20. Connect the muffler inlet pipes to the exhaust manifolds.
21. Lower the vehicle and install the two converter housing upper bolts and torque them to specification.
22. Install the starting motor upper bolt.
23. Place a new O-ring on the end of the fluid filler tube and insert it in the transmission case. Secure the tube to the rear of the right cylinder head with the attaching screw and lock washer.
24. Fill the transmission to the proper level with the specified fluids.
25. Adjust the manual and throttle linkage as required.

REMOVAL— CONTINENTAL MARK III

1. Working from the engine compartment, lift the fluid filler tube dipstick from the transmission.
2. Raise the vehicle on a hoist or stands.
3. Remove the dust shield from the front lower end of the converter housing.
4. Crank the engine until the converter drain plug is accessible. Then, remove the plug. Place a drain pan under the converter to catch the fluid.
5. Remove the driveshaft.
6. Remove the frame side rail support brace attaching bolts and remove the brace.
7. After the fluid has been drained from the converter, install the plug.
8. Place the drain pan under the transmission pan and loosen the attaching bolts and allow the fluid to drain. Finally remove all of the pan attaching bolts except two, to allow the oil to further drain. After the fluid has drained, install two bolts on the opposite side of the pan to temporarily hold it in place.
9. Remove the converter-to-flywheel attaching nuts.
10. Disconnect the downshift linkage from the transmission downshift lever.
11. Remove the selector rod from the manual lever.
12. Remove the two screws that attach the shift rod bellcrank bracket to the converter housing and remove the bracket.
13. Disconnect the vacuum diaphragm hose at the transmission.
14. Disconnect the speedometer cable from the extension housing and place it to one side.
15. Remove the two idler arm bracket retaining bolts at the frame side rail and allow the linkage to hang.
16. Disconnect the starter cable from the terminal on the starter. Remove the starter attaching bolts and remove it from the housing.
17. Remove the clip securing the oil cooler lines to the support bracket.
18. Disconnect the two oil cooler lines from the right side of the transmission.
19. Disconnect the muffler inlet pipes at the exhaust manifolds and allow the pipes to hang.
20. Remove the vibration absorber from the extension housing.
21. Remove the engine rear support to extension housing attaching bolts.
22. Place a transmission jack under the transmission and raise it just enough to remove the weight from the support.
23. Remove the two support attaching bolts and remove the support.
24. Lower the jack and secure the transmission to the jack with a safety chain.
25. Remove the bolt that secures the filler tube to the rear of the right cylinder head and lift the tube from the transmission case.
26. Remove the six converter housing-to-cylinder block attaching bolts.
27. Carefully lower the transmission and remove it from under the vehicle.
28. Remove the converter and mount the transmission in a holding fixture.

INSTALLATION— CONTINENTAL MARK III

1. Torque the converter drain plug to specification.
2. Install the converter on the stator support.
3. Secure the transmission on a transmission jack.
4. Rotate the converter so that the studs and drain plugs are in alignment with their holes in the flywheel.
5. Move the transmission toward the cylinder block until they contact each other. Install and torque the attaching bolts to specification.
6. Remove the jack safety chain from the transmission.
7. Connect the fluid cooler lines to their fittings on the right side of the transmission.
8. Install a new O-ring on the lower end of the fluid filler tube. Dip the O-ring in clean automatic transmission fluid and insert the tube in the transmission case. Install the attaching bolt.
9. Raise the transmission and in-

stall the engine rear support and torque the bolts to specification.

10. Lower the transmission and remove the jack.

11. Install the engine rear support-to-extension housing attaching bolts.

12. Install the drive shaft.

13. Connect the speedometer cable to the extension housing.

14. Connect the muffler inlet pipes to the exhaust manifolds.

15. Position the starting motor on the converter housing and secure it with the attaching bolts. Connect the cable to the terminal on the starter.

16. Position the idler arm bracket to the frame side rail and install the attaching bolts.

17. Install the torque converter-to-flywheel attaching nuts and torque them to specification.

18. Install the converter housing dust shield.

19. Secure the frame side rail support brace with the attaching bolts and lock washers. Torque the bolts to specification.

20. Connect the downshift rod to the transmission downshift lever.

21. Connect the manual selector rod to the manual lever.

22. Connect the vacuum hose to the vacuum diaphragm.

23. Install the oil cooler line retaining clip at the transmission support.

24. Position the vibration absorber to the transmission extension housing and secure it with the three attaching bolts.

25. Lower the vehicle.

26. Fill the transmission to the proper level with the specified fluids.

27. Adjust the manual and throttle linkage as required.

REMOVAL— LINCOLN CONTINENTAL

1. Raise the hood and remove the transmission dipstick.

2. Raise the vehicle on a hoist. Remove the bolt that secures the transmission filler tube to the cylinder head.

3. Remove the bolts that attach the reinforcement plate at the rear of the transmission oil pan and remove the plate.

4. Remove the three bolts that attach the manual and downshift control rod splash shield to the side rail and remove the shield.

5. Place a drain pan under the transmission. Loosen all transmission pan attaching bolts and allow the fluid to drain. Remove the bolts from the rear and both sides of the pan to allow further drainage; then, finally remove the pan. After all fluid has been drained, install the pan using four attaching bolts.

6. Remove the two bolts that attach the cover to the lower end of the converter housing.

7. Remove the two front support bracket bolts at the converter housing.

8. Remove the drain plug from the converter and allow it to drain.

9. Remove the four nuts that attach the converter to the flywheel.

10. Lift the fluid filler tube from the transmission case.

11. Remove the two idler arm bracket bolts from the frame side rail and allow the idler arm to hang free.

12. Disconnect the starter cable from the starter. Remove the starter attaching bolts and remove the starter.

13. Disconnect the oil cooler lines from the transmission.

14. Disconnect the vacuum hose from the diaphragm.

15. Loosen the parking brake adjusting nut at the equalizer and remove the retracting spring. Disconnect the rear brake cables and remove the equalizer from the bracket.

16. Disconnect the speedometer cable from the extension housing.

17. Disconnect the drive shaft from the transmission flange and position the shaft out of the way.

18. Disconnect the downshift rod from the transmission downshift lever.

19. Remove the manual selector rod from the manual lever.

20. Remove the lower bellcrank attaching bolts and remove the bellcrank.

21. Pry the upper bellcrank out of the converter housing and allow it to hang free.

22. Remove the cooler lines from the clip at the cylinder head.

23. Remove the converter housing-to-cylinder block lower attaching bolts.

24. Remove the two nuts that attach the engine rear mounts to the crossmember.

25. Place a transmission jack under the transmission and raise it just high enough to remove the weight from the crossmember.

26. Remove the engine rear support-to-extension housing attaching bolts and remove the supports.

27. Remove the crossmember-to-frame attaching nuts and remove the crossmember.

28. Secure the transmission to the jack with the safety chain. Lower the transmission and remove the upper converter housing-to-cylinder block attaching bolts.

29. Move the transmission away from the cylinder block.

30. Carefully lower the transmission and remove it from under the vehicle.

31. Remove the converter and mount the transmission in a holding fixture.

INSTALLATION— LINCOLN CONTINENTAL

1. Torque the converter drain plug to specification.

2. Install the converter on the stator support.

3. Secure the transmission on a transmission jack.

4. Rotate the converter so that the studs and drain plug are in alignment with those in the flywheel.

5. Move the transmission toward the cylinder block until they contact each other. Install and torque the attaching bolts to specification.

6. Secure the converter to the flywheel with the four attaching nuts. Torque the nuts to specification.

7. Secure the converter access cover to the converter housing with the attaching bolts.

8. Secure the two front support brackets to the converter housing with the attaching bolts.

9. Raise the transmission high enough to position the crossmember. Install the bolts, but do not tighten at this time.

10. Secure the engine rear support to the extension housing and torque the bolts to specification. At this time, install and torque the crossmember-to-frame attaching nuts to specification.

11. Lower the transmission and install the engine rear support-to-crossmember attaching nuts and plates. Torque the nuts to specification. Remove the transmission jack.

12. Install the upper bellcrank in the left side of the converter housing.

13. Position the lower bellcrank to the transmission and floor pan and secure it with the two attaching bolts.

14. Connect the downshift rod to transmission downshift lever.

15. Connect the manual selector rod to the manual lever.

16. Position the manual and downshift control rod splash shield to the frame side rail and secure it with the attaching bolts.

17. Connect the speedometer cable

to the extension housing.

18. Connect the vacuum hose to the vacuum diaphragm and secure with a clamp.

19. Connect the two oil cooler lines to the fittings on the right side of the case.

20. Install the cooler lines under the clip at the cylinder head.

21. Position the reinforcement plate and torque the attaching bolts.

22. Install the equalizer and parking brake cables. Install the equalizer lever retracting spring.

23. Install the drive shaft.

24. Install a new seal on the filler tube and install it in the transmission case. Secure the filler tube to the cylinder head.

25. Install the starting motor and connect the cable.

26. Install the idler arm bracket-to-frame side rail.

27. Lower the vehicle.

28. Fill the transmission to the correct level with the specified fluid.

29. Adjust the manual and throttle linkage as required.

4 MAJOR REPAIR OPERATIONS

DISASSEMBLY OF TRANSMISSION

1. Mount the transmission in holding fixture T64L-6001-A (Fig. 22).

2. Remove the 17 fluid pan attaching bolts. Remove the pan and gasket.

3. Remove the 8 valve body attaching bolts (Fig. 23). Lift the valve body from the transmission case.

4. Attach a dial indicator to the front pump as shown in Fig. 24. Install tool T61L-7657-B in the extension housing to center the shaft.

5. Pry the gear train to the rear of the case and at the same time, press the input shaft inward until it bottoms (Fig. 24). Set the dial indicator to read zero.

6. Pry the gear train forward (Fig. 24) and note the amount of gear train end play on the dial indicator. Record the end play to facilitate assembling the transmission. Remove the dial indicator from the pump and the tool from the extension housing.

7. Remove the vacuum diaphragm, rod and the primary throttle valve from the case. Slip the input shaft out of the front pump.

8. Remove the front pump attaching bolts. Pry the gear train forward as shown in Fig. 25 to remove the pump.

9. Loosen the band adjustment screw and remove the two struts.

10. Rotate the band 90 degrees counterclockwise to align the ends with the slot in the case (Fig. 26). Slide the band off the reverse-high clutch drum.

11. Remove the forward part of the gear train as an assembly as shown in Fig. 27.

12. Remove the large snap ring that secures the reverse planet carrier in the low-reverse clutch hub. Lift the planet carrier from the drum.

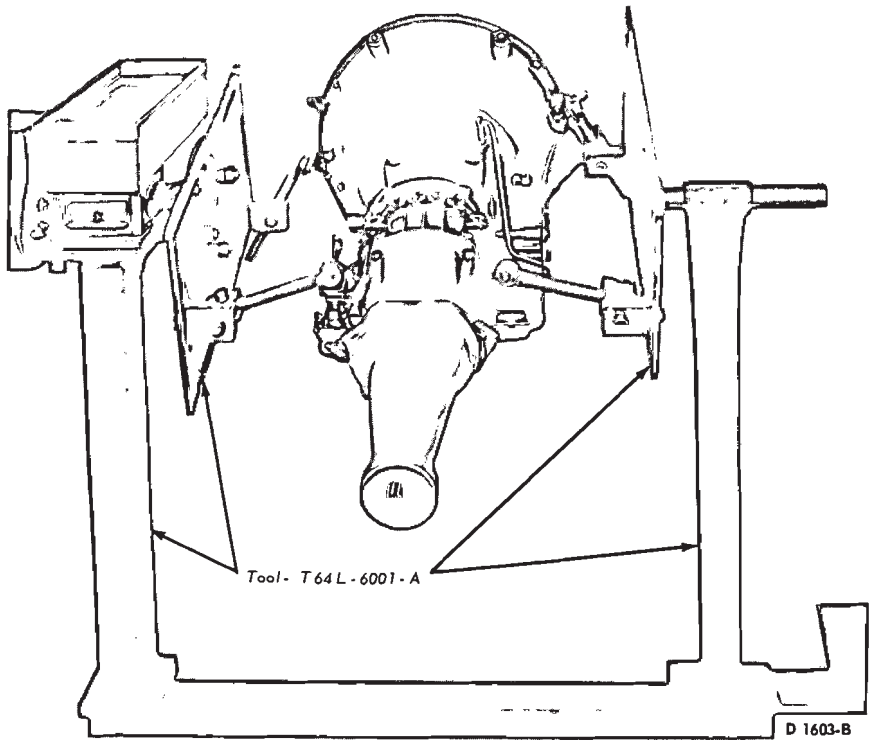

FIG. 22—Transmission Mounted in Holding Fixture

13. Remove the snap ring (Fig. 28) that secures the reverse ring gear and hub on the output shaft. Slide the ring gear and hub off the shaft.

14. Rotate the low-reverse clutch hub in a clockwise direction and at the same time, withdraw it from the case.

15. Remove the reverse clutch snap ring from the case, then remove the clutch discs, plates and pressure plate from the case.

16. Remove the extension housing attaching bolts and vent tube from the case. Remove the extension housing and gasket.

17. Slide the output shaft assembly from the transmission case.

18. Remove the distributor sleeve attaching bolts and remove the sleeve, parking pawl gear and the thrust washer.

If the thrust washer is staked in place, use a sharp chisel and cut off the metal from behind the thrust washer. Be sure to clean the rear of the case with air pressure or a suitable solvent to remove any metal particles.

19. Compress the reverse clutch piston release spring with tool T65P-77515-A (Fig. 29). Remove the snap

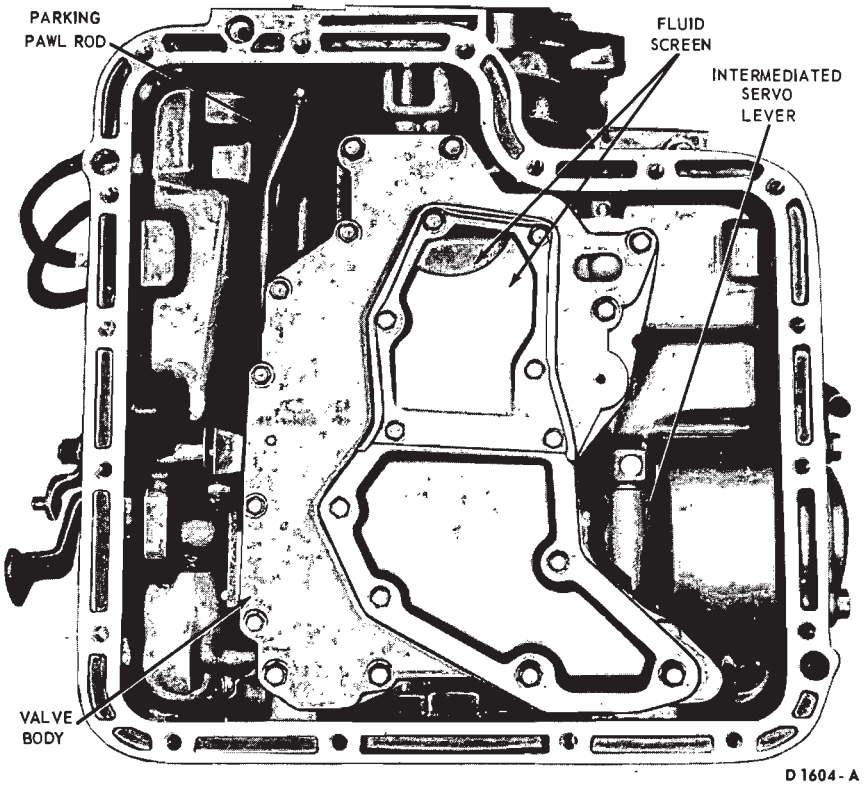

FIG. 23—Transmission with Pan Removed

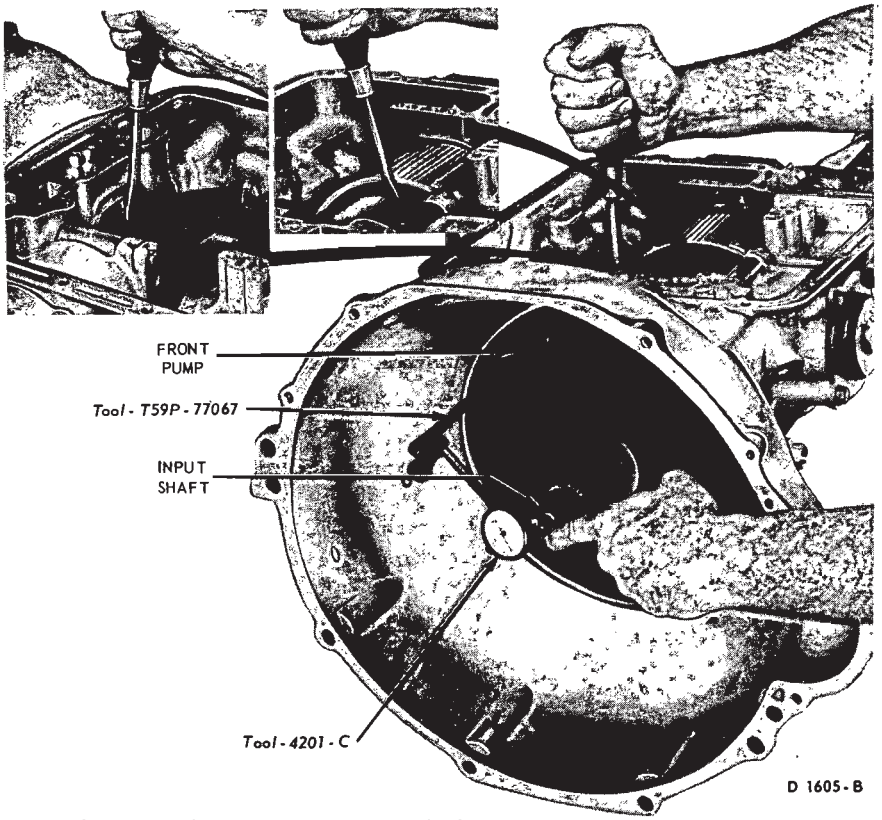

FIG. 24—Checking Gear Train End Play

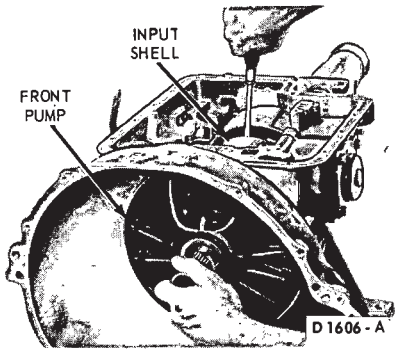

FIG. 25—Removing Front Pump

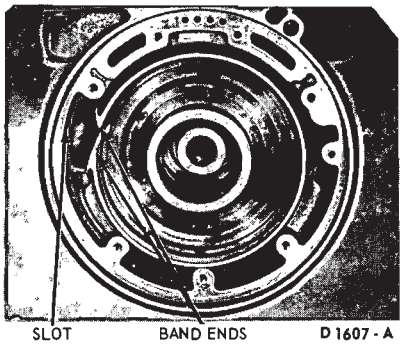

FIG. 26—Removing or Installing Band

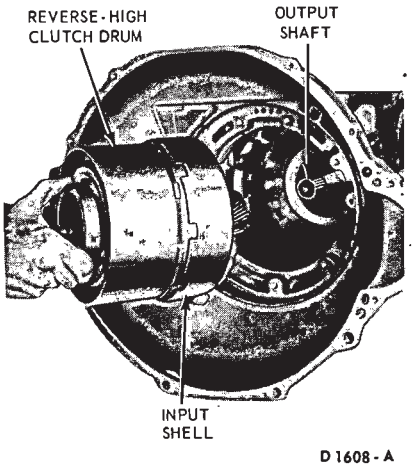

FIG. 27—Removing or Installing Forward Part of Gear Train

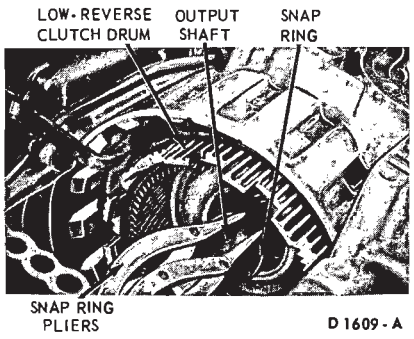

FIG. 28—Removing or Installing Reverse Ring Gear Hub Retaining Ring

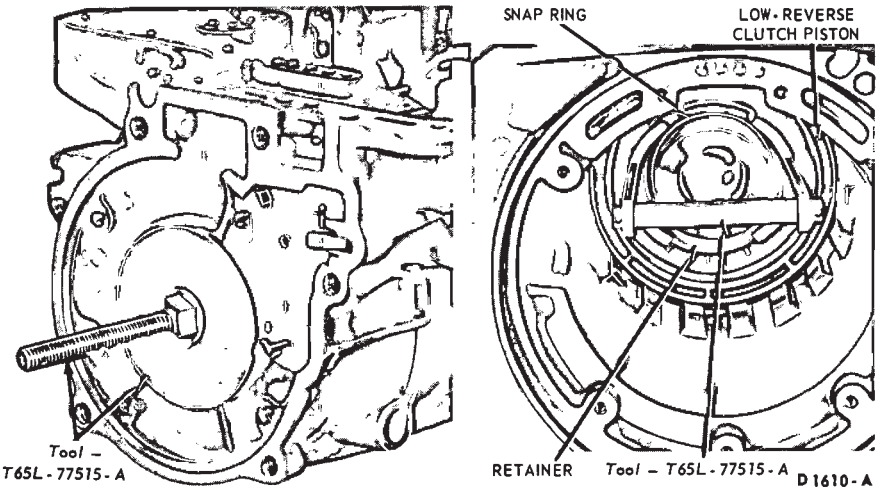

FIG. 29—Compressing Reverse Clutch Springs

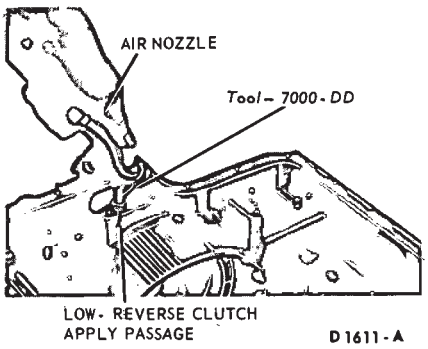

FIG. 30—Removing Low-Reverse Clutch Piston

ring. Remove the tool and the spring retainer.

20. Remove the one-way clutch inner race attaching bolts from the rear of the case. Remove the inner race from inside of the case.

21. Remove the reverse clutch piston from the case as shown in Fig. 30.

PARTS REPAIR OR REPLACEMENT

During the repair of the subassemblies, certain general instructions which apply to all units of the transmission must be followed. Following these instructions will avoid unnecessary repetition.

All transmission parts must be handled carefully to avoid nicking or burring the bearing or mating surfaces.

Lubricate all internal parts of the transmission with clean automatic transmission fluid before assembling them.

Do not use any other lubricants except on gaskets and thrust washers. These may be coated with vaseline to facilitate assembly. Always use new gaskets and seals when assembling a transmission.

Tighten all bolts and screws to the recommended torque as outlined in the Specification Section.

TRANSMISSION CASE AND LINKAGE

Downshift and Manual Linkage

1. Remove the nut and lock washer that secures the outer downshift lever to the transmission and remove the lever.

2. On a Mustang or Cougar, remove the two bolts that secure the neutral safety switch to the case. Insert a screwdriver between the switch and case as close as possible to the shaft. Gently pry the switch from the case.

3. Slide the downshift lever out from the inside of the case (Fig. 31). Remove the seal from the recess in the manual lever shaft.

4. Remove the C-ring that secures the parking pawl actuating rod to the manual lever. Remove the rod from the case.

5. Remove the nut that secures the inner manual lever to the shaft. Remove the inner lever from the shaft. Slide the outer lever and shaft from the case.

6. Remove the seal from the case with Tools T59L-100-B and T58L-101-A or 7600-E.

7. Dip the new seal in transmission fluid and install it in the case as shown in Fig. 32.

8. Slide the outer manual lever and shaft in the transmission case.

9. Position the inner lever on the shaft and install the attaching nut. Tighten the nut to specification. Install the parking pawl actuating rod and secure it to the inner manual lever with a C-washer.

10. Install a new downshift lever seal in the recess of the outer lever shaft. Slide the downshift lever and shaft into position.

11. On a Mustang or Cougar, position the neutral switch on the manual lever and secure it with the two attaching bolts. Leave the attaching bolts loose to adjust the switch after installing the control valve.

12. Place the outer downshift lever on the shaft and secure it with a lock washer and nut.

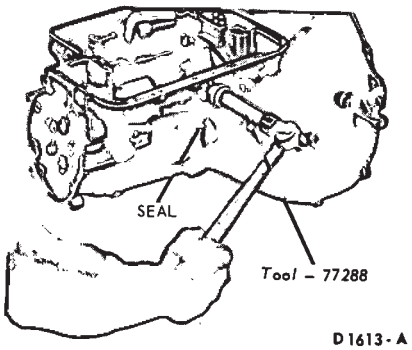

FIG. 32—Installing Manual Lever Seal

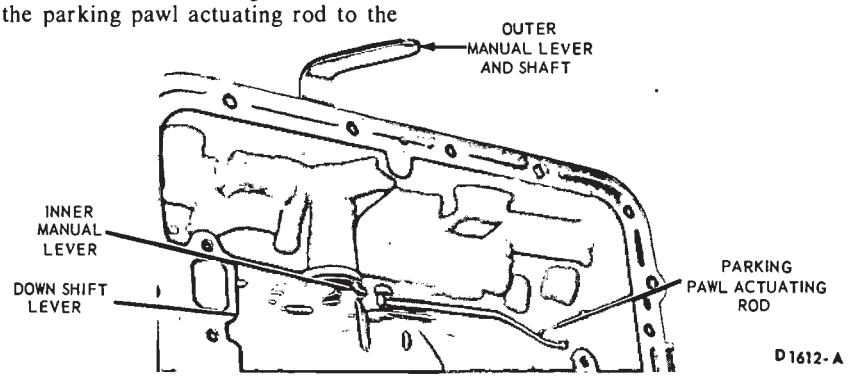

FIG. 31—Downshift and Manual Linkage

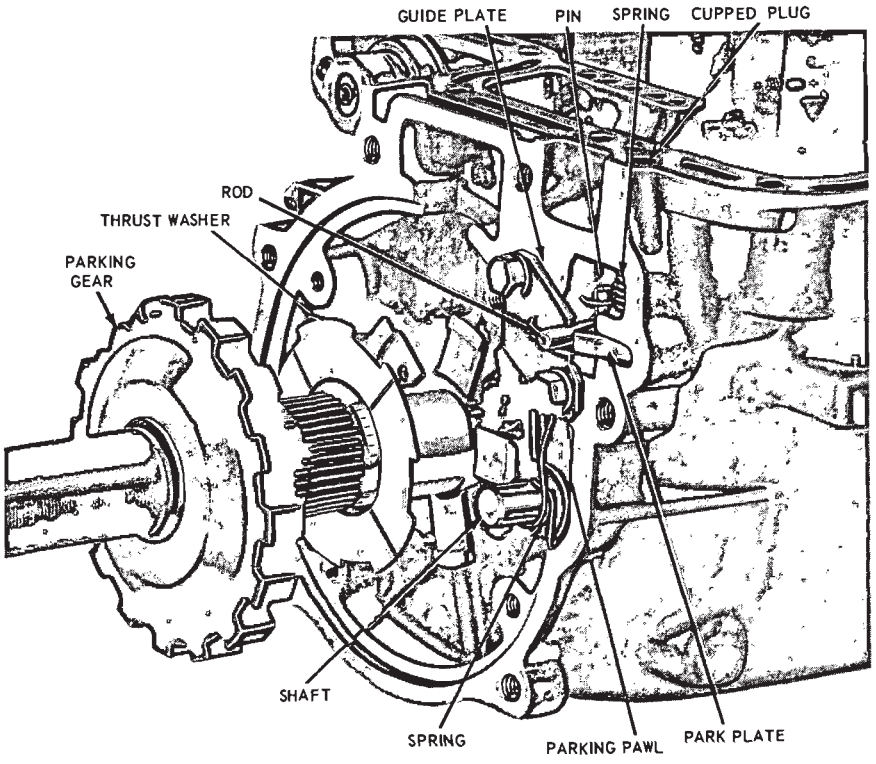

FIG. 33—Parking Pawl Mechanism

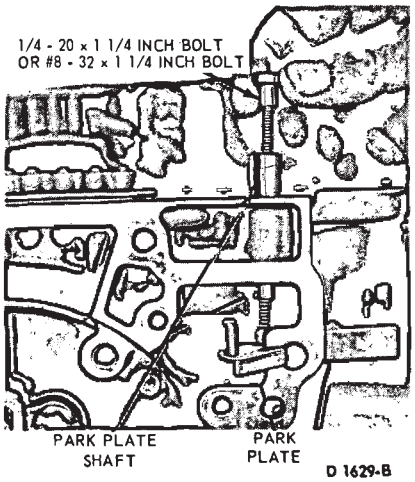

FIG. 34—Removing Park Plate Shaft

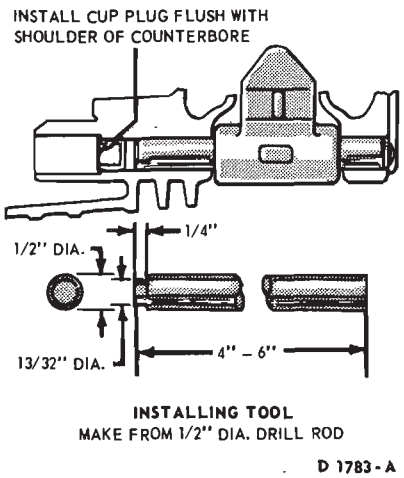

FIG. 35—Servo Apply Lever Installation

Parking Pawl Linkage

1. Remove the bolts that secure the parking pawl guide plate to the case (Fig. 33). Remove the plate.
2. Remove the spring, parking pawl and shaft from the case.
3. Working from the pan mounting surface, drill a 1/8 inch diameter hole through the center of the cupped plug. Pull the plug from the case with a wire hook.
4. Lift the end of the spring off the park plate pin to relieve the tension.
5. Thread a 1/4-20 inch or #8-32 x 1 1/4 inch screw (Fig. 34) into the park plate shaft. Pull the shaft from the case with the screw.
6. Position the spring and park plate in the case and install the shaft. Hook the end of the spring over the pin on the park plate.
7. Install a new cupped washer (Fig. 33) to retain the shaft.
8. Install the parking pawl shaft in the case. Slip the parking pawl and spring into place on the shaft.
9. Position the guide plate on the case making sure that the actuating rod is seated in the slot of the plate. Secure the plate with two bolts and lock washers.

Servo Apply Lever

1. Working from inside of the transmission case, carefully drive on the servo apply lever shaft to remove the cup plug. The shaft (Fig. 35) can be withdrawn from the case by hand.
2. Hold the servo apply lever in position and install the new shaft.
3. Using the fabricated tool shown in Fig. 35, drive the cup plug into position in the case. Be sure the plug is flush with the shoulder of the counterbore. The cup plug may be coated with Loctite, Part No. C3AZ-19554-A, before installation.

Threaded Repair-Case

Thread service kits may be purchased from local jobbers or the Heli-Coil Corporation. To repair a damaged thread, the following procedures should be carefully followed:

1. Drill out the damaged threads **using the same size threads as the thread OD.** For example, use a 5/16-inch drill when repairing a 5/16-18 inch thread.
2. Select the proper **special** tap and tap the drilled hole. The tap is marked for the size of the thread being repaired. Thus, the special tap supplied with the repair kit marked 5/16-18 will not cut the same thread as a standard 5/16-inch tap. It will cut a thread large enough to accommodate the insert, and after the insert is installed, the original thread size (5/16-18 inch) is restored.
3. Select the proper coil inserting tool. These tools are marked with the thread size being repaired. Place the insert on the tool and adjust the sleeve to the length of the insert being used.

Press the insert against the face of the tapped hole. Turn the tool clockwise and wind the insert into the hole until the insert is one half turn below the face.

4. Working through the insert, bend the insert tang straight up and down until it breaks off at the notch.
5. If the inserts are not properly installed, they can be removed with the extractor tool. Place the extractor tool in the insert so that the blade

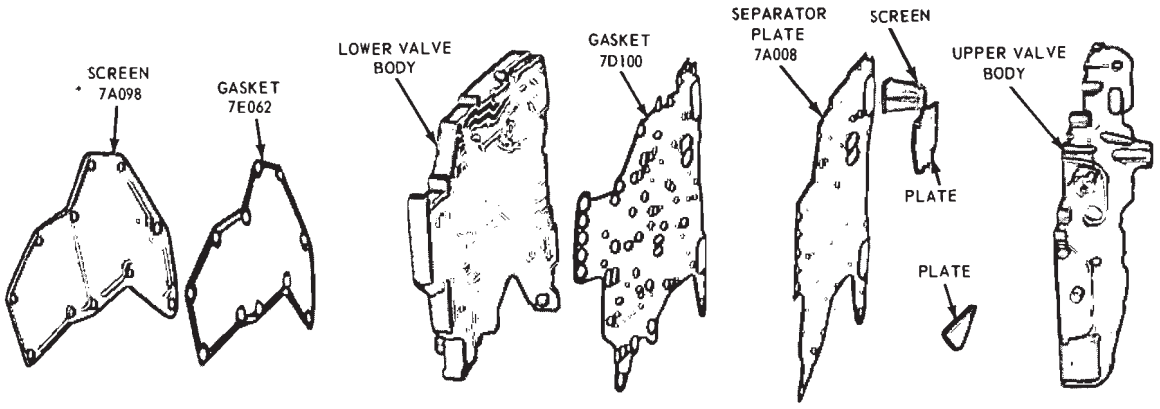

FIG. 36—Upper and Lower Valve Bodies Disassembled

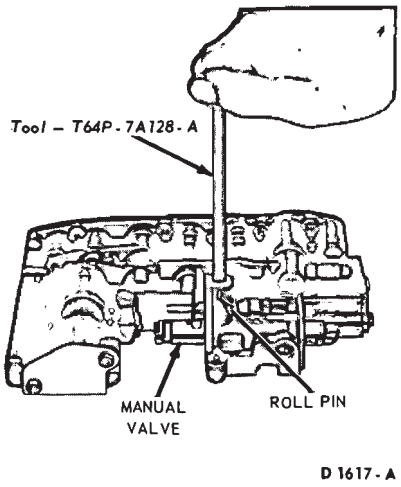

FIG. 37—Removing Manual Valve

rests against the top coil 1/4-1/2 turn away from the end of the coil. Tap the tool sharply with a hammer so that the blade cuts into the insert. Exert downward pressure on the tool and turn it counterclockwise until the insert is removed.

CONTROL VALVE BODY

Disassembly

When the main control is disassembled and the valve body-to-screen gasket is removed, the gasket should not be cleaned in a degreaser, solvent or any type of detergent solution. To clean the gasket, wipe it off with a lint-free cloth.

1. Remove the nine screws that attach the screen to the lower valve body and remove the screen and gasket (Fig. 36).
2. Remove the twelve screws and the 2 plates that attach the two valve bodies.
3. Separate the bodies and remove the separator plate and gasket. Be careful not to lose the check valves and springs. Remove and clean the separator plate screen if necessary.
4. Depress the manual valve detent spring with the tool shown in Fig. 37.

Remove the retaining pin from the upper valve body. Remove the spring and detent plunger.

5. Slide the manual valve (Fig. 38) out of the valve body.
6. Cover the downshift valve port with a finger, then working from the underside of the body remove the downshift valve retainer. Remove the spring and downshift valve.
7. Apply pressure on the pressure booster valve retaining plate and remove the two attaching screws. Slowly release the pressure and remove the plate, sleeve and the pressure booster valve. Remove the two springs and the main regulator valve from the same bore.
8. Apply pressure on the throttle booster valve retaining plate and remove the two attaching screws. Slowly release the pressure and remove plate, throttle booster valve and spring, and the manual low 2-1 scheduling valve and spring from the body.
9. Apply pressure on the remaining valve retaining plate and remove the eight attaching screws.
10. Hold the valve body so that the plate is facing upward. Slowly release the pressure and remove the plate.
11. When removing the various valves from the control valve body, keep all ports covered with your fingers except the bore the valve is being removed from. Remove the spring and the intermediate servo modulator valve (Fig. 38) from the valve body.
12. Remove the intermediate servo accumulator valve and springs.
13. Remove the 2-3 back-out valve, and spring.
14. Remove the 2-3 shift valve, spring and the throttle modulator valve.
15. Remove the 1-2 shift valve, D2 shift valve and the spring from the valve body.
16. Remove the coasting regulator valve from the body.
17. Remove the cutback control valve.
18. Remove the 3-2 shift timing valve retainer and remove the plug. Remove the 3-2 shift timing valve and spring to complete the disassembly of the control valve. Do not remove the 3-2 shift timing valve plug if it is found to be peened, preventing the removal of the plug and the 3-2 shift timing valve. This condition will not affect transmission operation and is not cause for replacement of the main control. The 3-2 shift timing valve is non-functional and removal of the plug, 3-2 shift timing valve and spring is not required.

Assembly

1. Place the spring 3-2 shift timing valve and plug in the valve body if they were previously removed. Install the plug retainer.
2. Place the downshift valve and spring in the valve body. Compress the spring and install the retainer from the underside of the body.
3. Place the valve body on a clean surface and the passage side facing up. Place the converter relief valve spring in its bore (Fig. 39). Coat the converter relief valve check valve with

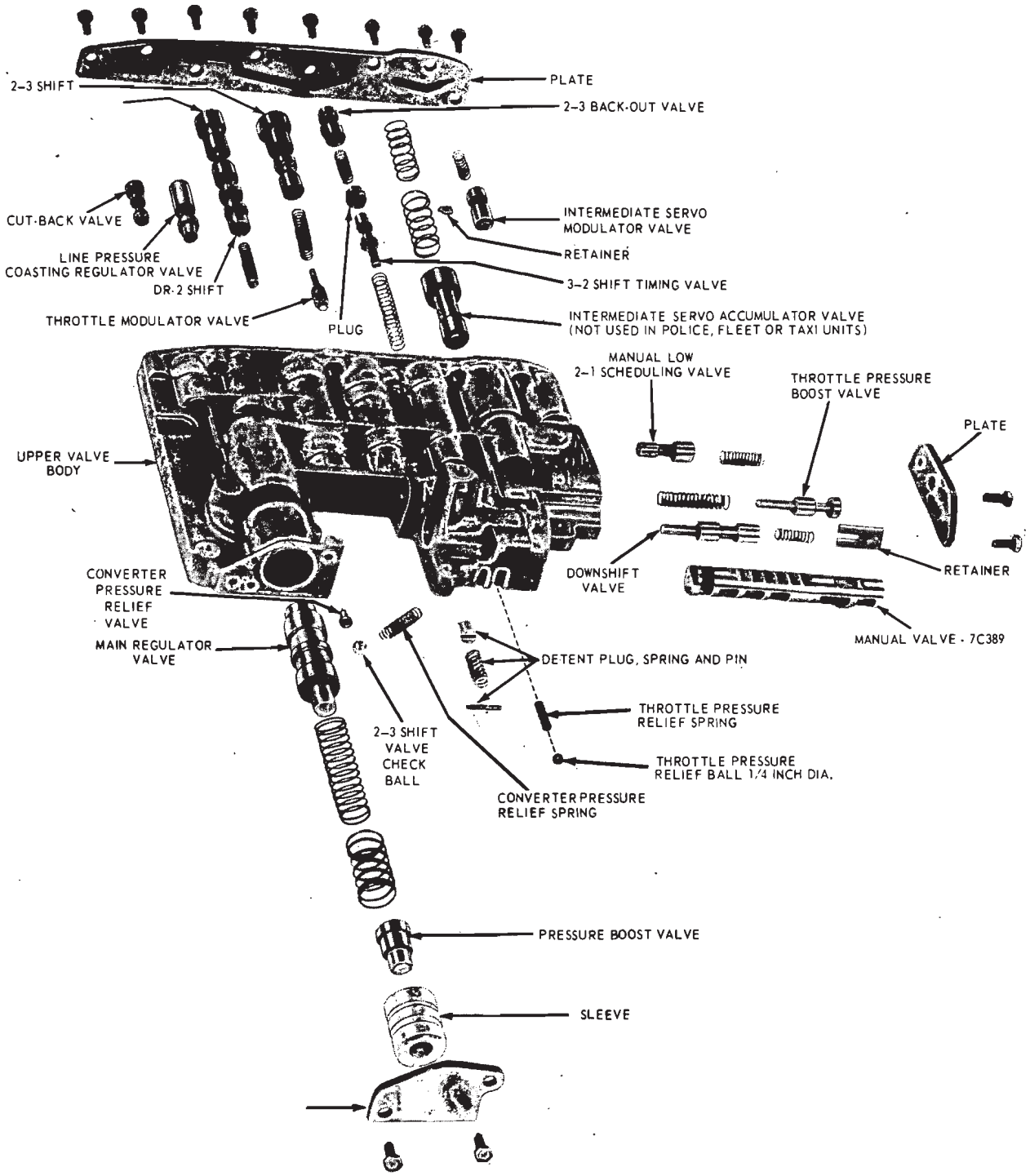

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FIG. 38—Upper Valve Body Disassembled

vaseline and place it on top of the spring. Place the 2-3 shift check valve ball in its cavity. Place the throttle pressure relief valve spring in its bore (Fig. 39). Coat the throttle pressure relief valve check ball with vaseline and place it on top of the spring.

4. Install the separator screen in the separator plate if it was previously removed. Be sure the screen tabs are flush with the separator plate surface. Carefully position the separator plate, new gasket and the lower valve body on the upper valve body and install and torque the attaching bolts to specification.

5. Secure the screen to the lower valve body with the attaching bolts and torque them to specification.

6. Place the cutback control valve (Fig. 38) in the valve body.

7. Place the coasting regulator valve in the body.

8. Place the spring D2 shift valve and the 1-2 shift valve in the body.

9. Place the throttle modulator valve and spring and the 2-3 shift valve in the valve body.

10. Place the spring and the 2-3 backout valve in the valve body.

11. Place the two springs and the intermediate servo accumulator valve in the valve body.

12. Place the intermediate servo

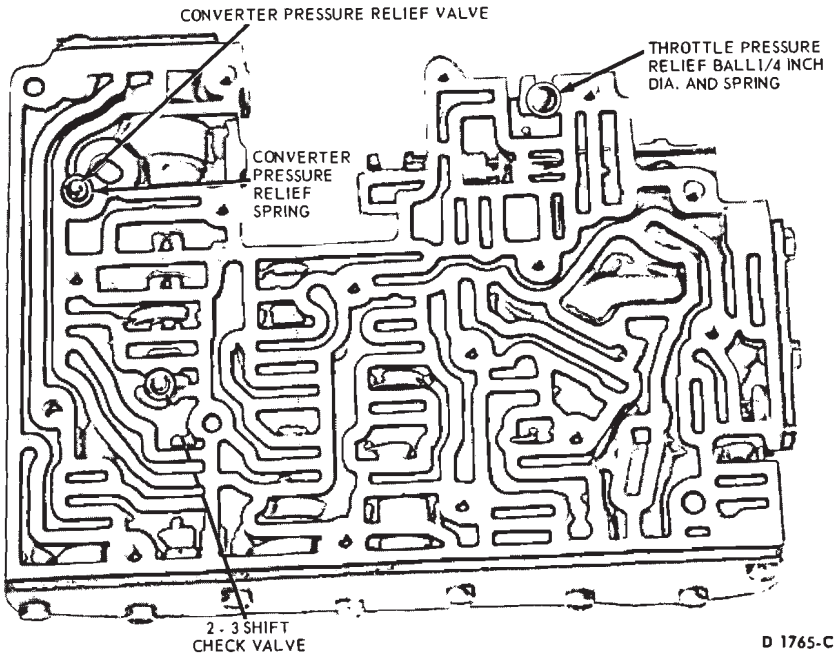


FIG. 39—Converter Pressure Relief Valve, Throttle Pressure Relief Valve, and 2-3 Shift Check Valve Locations

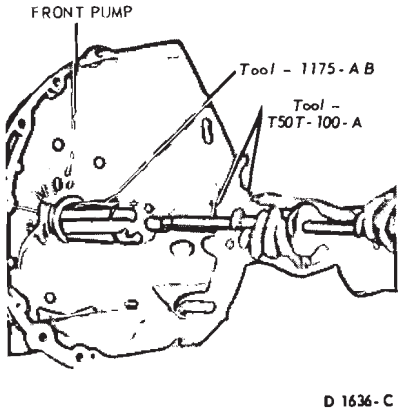


FIG. 40—Removing Front Pump Seal

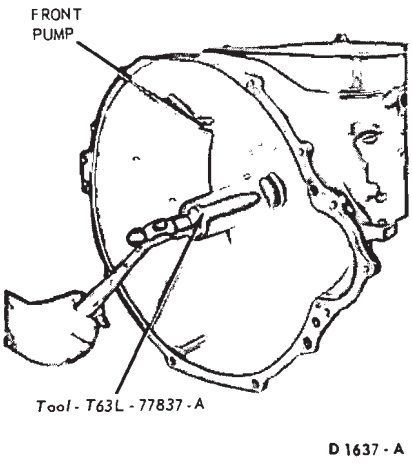


FIG. 41—Installing Front Pump Seal

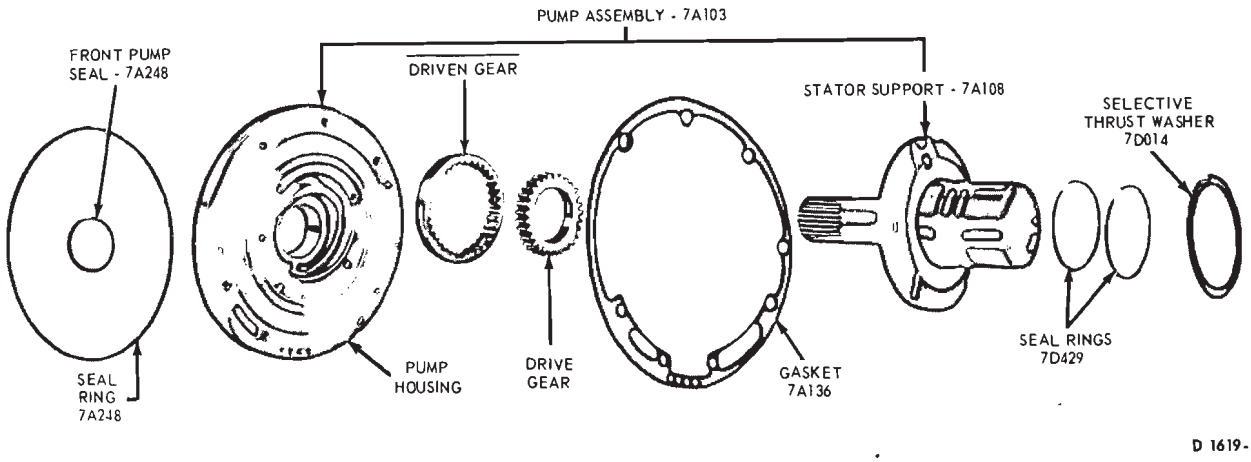
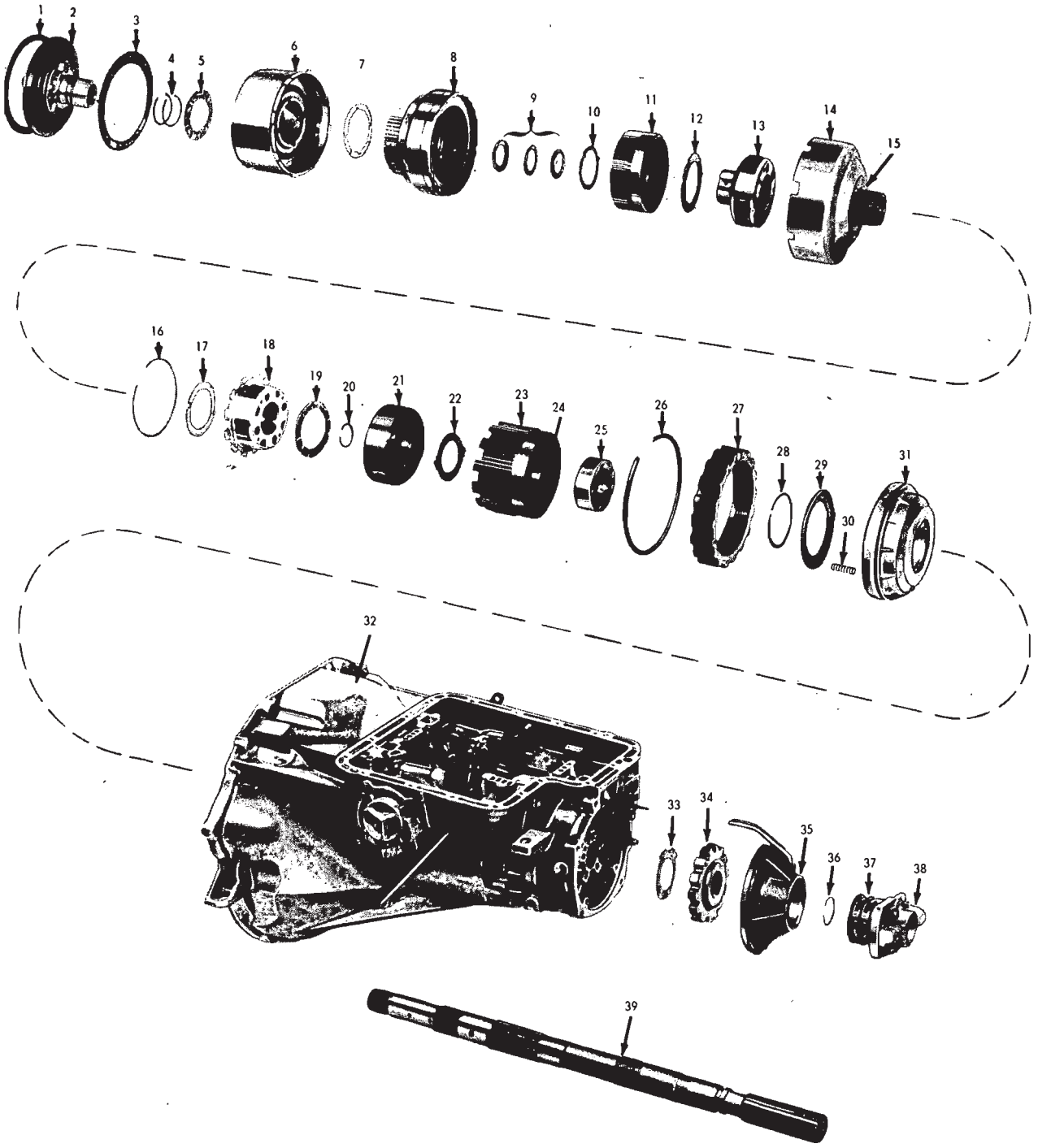


FIG. 42—Front Pump Disassembled



1. FRONT PUMP SEAL RING-7A248
2. FRONT PUMP - 7A103
3. GASKET - 7A136
4. SEAL
5. NUMBER 1 THRUST WASHER (SELECTIVE)
6. REVERSE – HIGH CLUTCH ASSEMBLY
7. NUMBER 2 THRUST WASHER
8. FORWARD CLUTCH ASSEMBLY
9. NUMBER 3 THRUST WASHER
10. NUMBER 4 THRUST WASHER
11. FORWARD CLUTCH HUB ASSEMBLY - 7D392
12. NUMBER 5 THRUST WASHER
13. FORWARD PLANET ASSEMBLY - 7A398
14. INPUT SHELL - 7D064 AND SUN GEAR ASSEMBLY - 7D063
15. NUMBER 6 THRUST WASHER
16. SNAP RING
17. NUMBER 7 THRUST WASHER
18. REVERSE PLANET ASSEMBLY - 7D006
19. NUMBER 8 THRUST WASHER
20. REVERSE RING GEAR AND HUB RETAINING RING
21. REVERSE RING GEAR - 7A153 AND HUB - 7D164
22. NUMBER 9 THRUST WASHER
23. LOW – REVERSE CLUTCH HUB - 7B067
24. ONE-WAY CLUTCH - 7A089
25. ONE-WAY CLUTCH INNER RACE - 7D171
26. SNAP RING
27. LOW–REVERSE CLUTCH
28. SNAP RING
29. LOW – REVERSE PISTON RETURN SPRING RETAINER - 7D406
30. RETURN SPRING
31. LOW – REVERSE PISTON - 7D402
32. CASE - 7005
33. NUMBER 10 THRUST WASHER
34. PARKING GEAR - 7A233
35. GOVERNOR DISTRIBUTOR SLEEVE - 7C232
36. SNAP RING
37. GOVERNOR DISTRIBUTOR - 7D220
38. GOVERNOR - 7C063
39. OUTPUT SHAFT - 7060

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FIG. 43—Drive Train Disassembled

modulator valve and spring in the body.

13. Carefully place the valve retaining plate on the body and secure it with the eight attaching screws. Tighten the screws to specification.

14. Place the throttle booster valve and spring in the valve body. Place the manual low 2-1 scheduling valve and spring in the valve body and install the retaining plate. Torque the attaching screws to specification.

15. Place the main regulator, two springs, pressure booster valve and the sleeve in the valve body.

16. Install the pressure booster plate and torque the two attaching screws to specification.

17. Place the manual valve in the valve body and install the detent plug, spring and the retaining pin in the body.

FRONT PUMP

The front seal can be replaced after the pump has been installed on the transmission (Figs. 40 and 41).

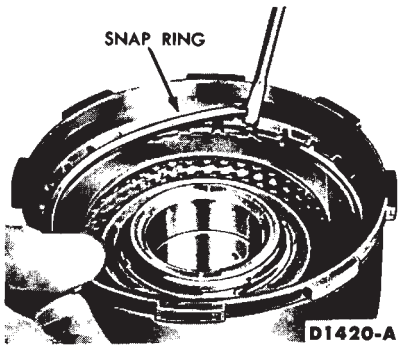


FIG. 44—Removing or Installing Reverse-High Clutch Pressure Plate Snap Ring

Disassembly

1. Remove the two seal rings and the selective thrust washer (Fig. 42).

2. Remove the large square-cut seal from the O.D. of the pump housing.

3. Remove the 5 bolts that secure the pump support to the pump housing. Lift the support from the housing.

4. Remove the drive and the driven gear from the housing.

Assembly

1. Install the drive and driven gears in the pump housing. Each gear has an identification mark on one face. **The identification mark on each gear must be toward the front of the pump housing.**

2. Position the pump support in the pump housing and install and torque the five attaching bolts to specification.

3. Carefully install two new seal rings on the pump support. Make sure that the ends of the rings are engaged to lock them in place. Install a new square-cut seal on the O.D. of the pump housing.

4. Install the selective thrust washer. Make sure that the correct thickness selective washer is being used to obtain the specified end play.

5. Place the pump on converter making sure that the drive gear engages the converter hub. Rotate the pump to make sure that the gears rotate freely.

REVERSE-HIGH CLUTCH

Disassembly

1. Separate the drive train as shown in Fig. 43. Remove the pressure plate retaining snap ring as shown in Fig. 44.

2. Remove the pressure plate and the drive and driven clutch plates (Fig. 45).

3. Install Tool T65L-77515-A (Fig. 46) on the reverse-high clutch drum.

Make sure that the legs clear the snap ring enough to permit expanding it enough for removing it. Remove the snap rings and remove the tool.

4. Remove the spring retainer and the piston return springs.

5. Apply air pressure to the piston apply hole in the clutch hub (Fig. 47) and remove the piston.

6. Remove the piston outer seal from the piston and the inner seal from the clutch drum (Fig. 45).

7. Remove the front and rear bushings from the clutch drum if they are worn or damaged. To remove the front bushing, use a cape chisel and cut along the bushing seam until the chisel breaks through the bushing wall. Pry the loose ends of the bushing up with an awl and remove the bushing.

To remove the rear bushing, use the tool shown in Fig. 48,and press the bushing from the drum.

Assembly

1. If the clutch drum bushings were removed, position the drum in a press and press new bushings into the drum with the tools shown in Figs. 48 or 49.

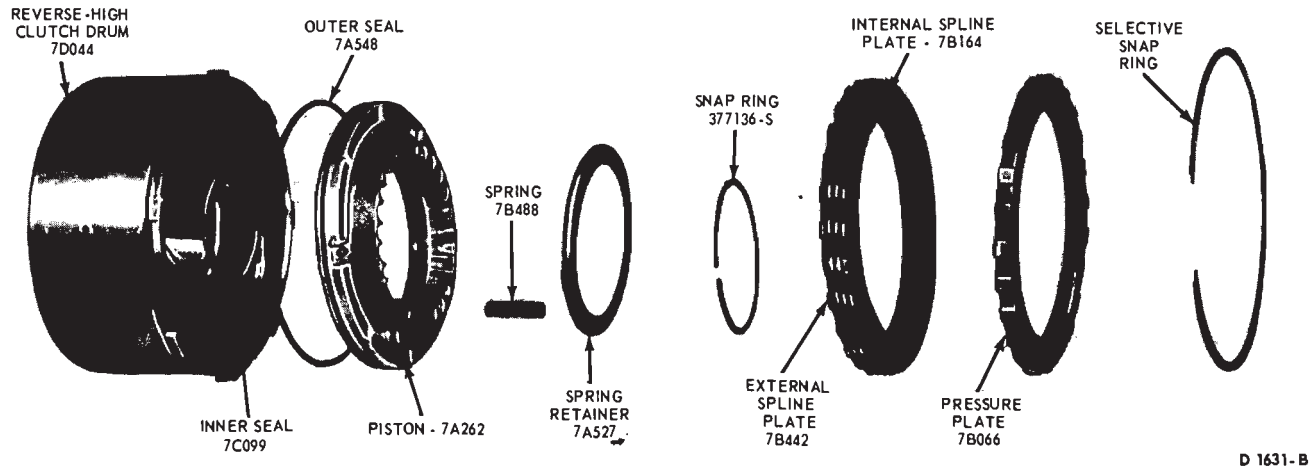


FIG. 45—Reverse-High Clutch Disassembled

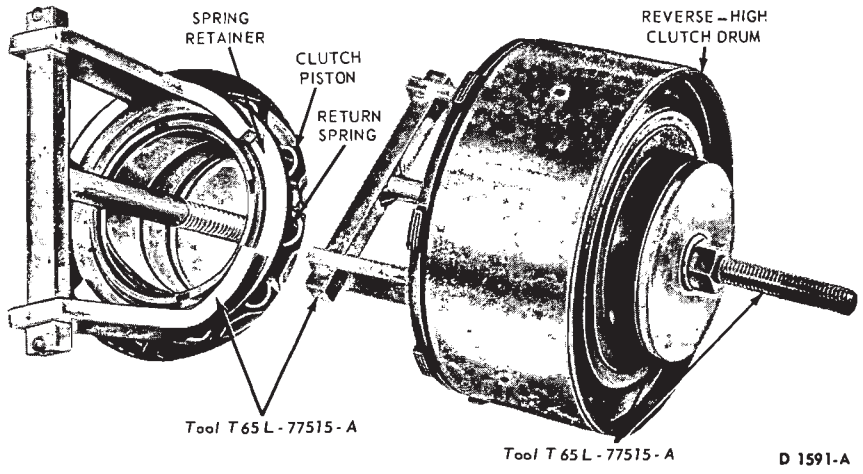


FIG. 46—Removing or Installing Reverse-High Clutch Piston Snap Ring

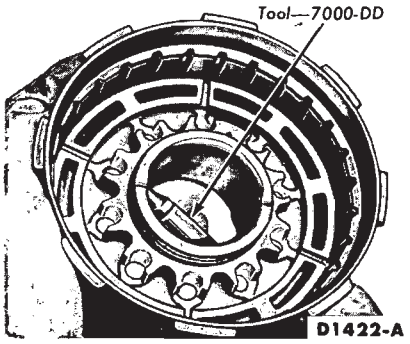


FIG. 47—Removing Reverse-High Clutch Piston

2. Dip the new seals in transmission fluid and install one on the drum and one on the piston.

3. Install the piston in the clutch drum.

4. Position the piston return springs in the piston sockets. Place the spring retainer on the springs.

5. Install Tool T65L-77515-A (Fig. 46) and compress the springs. Make certain that the spring retainer is centered while compressing the springs. Install the snap ring. Before releasing the pressure on the tool, make certain that the snap ring is positioned inside of the four snap ring guides on the spring retainer.

6. Clutch plate usage varies with each model, refer to the Specifications Section for the number of plates required. Dip the clutch plates in clean transmission fluid. Install the clutch plates alternately starting with a steel drive plate (Fig. 45). When new composition clutch plates are used, soak the plates in automatic transmission fluid for 15 minutes before they are assembled.

7. After all clutch plates have been installed, position the pressure plate in the clutch drum. Install the pressure plate snap ring.

8. With a feeler gauge, check the clearance between the pressure plate and snap ring (Fig. 50).

9. The pressure plate should be held downward as the clearance is checked. Refer to the Specification Section for the proper clearance. If the clearance is not within specifications, selective thickness snap rings are available in the following thicknesses: 0.065-0.069, 0.074-0.078, and 0.083-0.087 inch. Install the correct size snap ring and recheck the clearance.

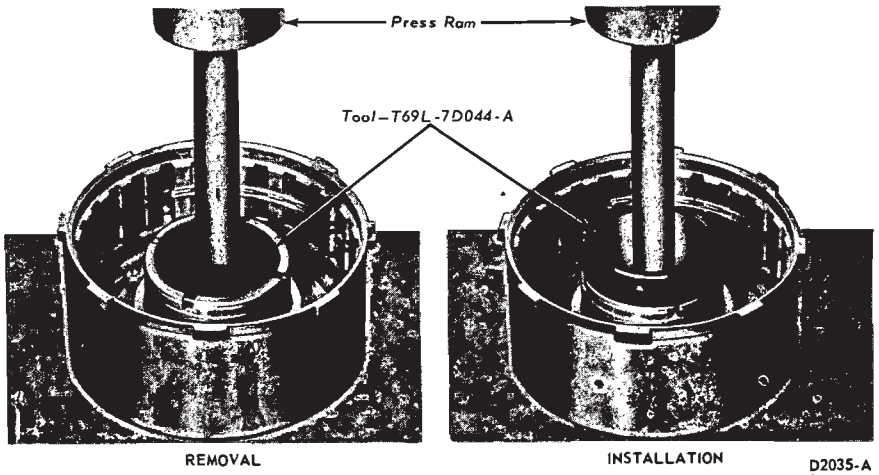


FIG. 48—Replacing Reverse-High Clutch Rear Bushing

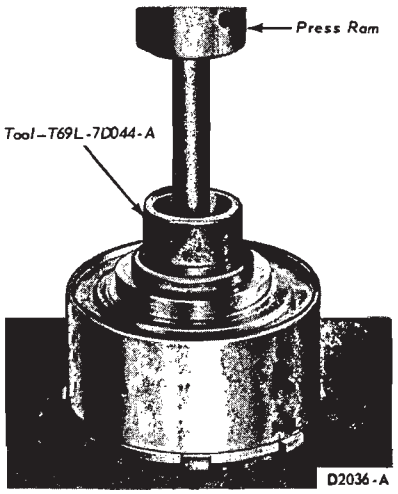


FIG. 49—Installing Reverse-High Clutch Front Bushing

FIG. 50—Checking Reverse-High Clutch Snap Ring Clearance

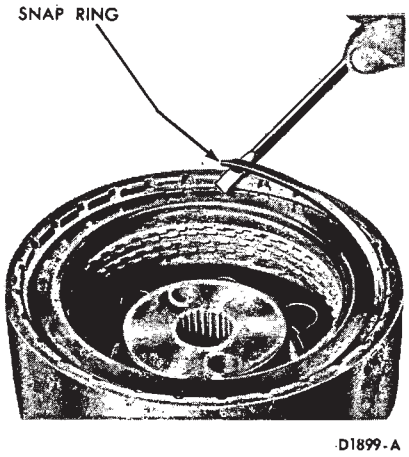


FIG. 51—Removing Forward Clutch Pressure Plate Snap Ring

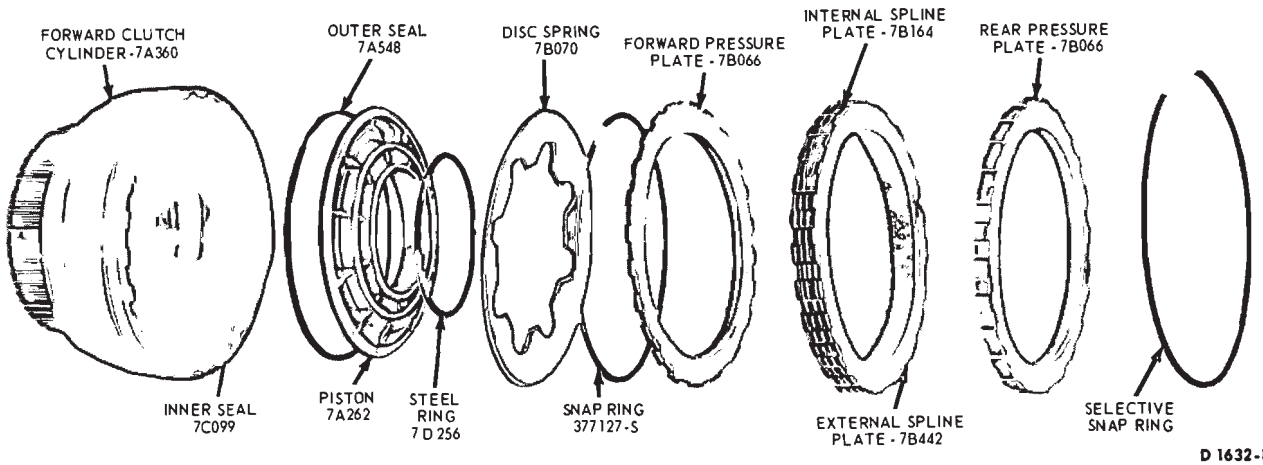


FIG. 52—Forward Clutch Disassembled

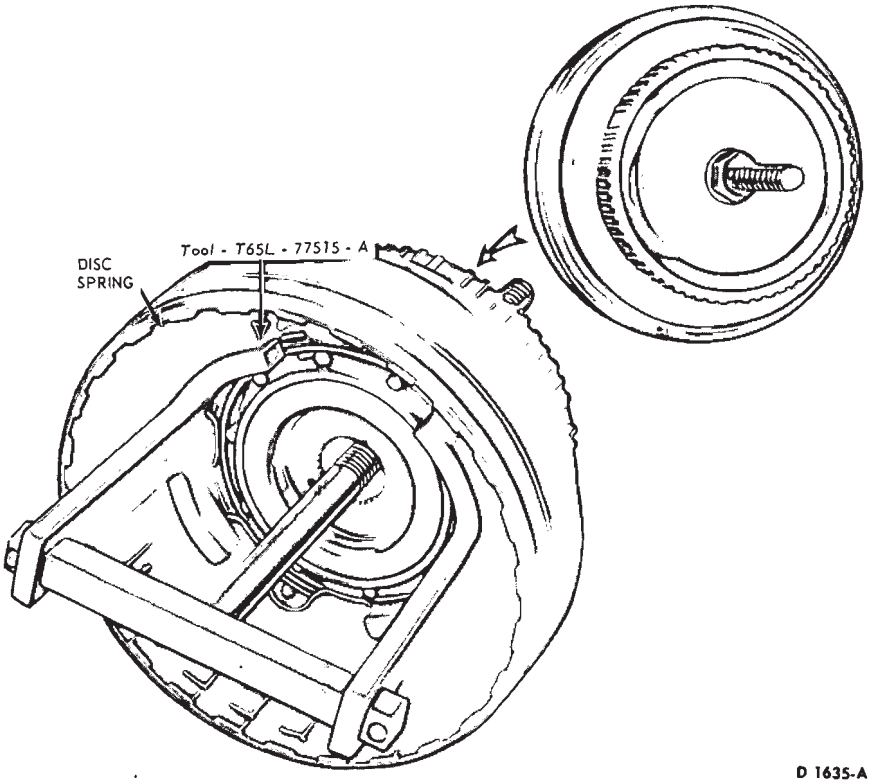


FIG. 53—Removing or Installing Disc Spring

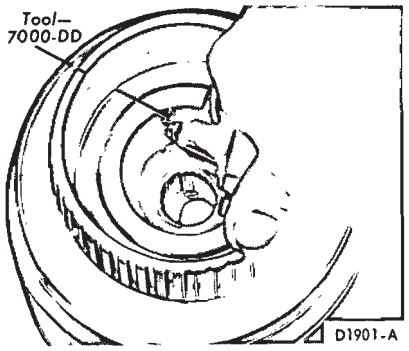


FIG. 54—Removing Forward Clutch Piston

FORWARD CLUTCH

Disassembly

1. Remove the clutch pressure plate retaining snap ring (Fig. 51).
2. Remove the rear pressure plate, the drive and driven plates and the forward pressure plate from the clutch hub (Fig. 52).
3. Remove the snap ring (Fig. 53) that secures the disc spring in the clutch cylinder. Remove the disc spring.
4. Apply air pressure to the clutch apply passage in the cylinder (Fig. 54) to remove the piston.
5. Remove the seal from the piston and the seal from the clutch hub (Fig. 52).

Assembly

1. Dip two new seals in transmission fluid. Install the smaller seal on the clutch hub and the other seal on the clutch piston.
2. Install the clutch piston in the cylinder.
3. Make sure that the steel pressure ring is in the groove on the piston. Position the disc spring in the cylinder with the dished face downward. Install the spring as shown in Fig. 56. Secure the disc with the retaining snap ring.
4. Install the forward pressure plate with the flat side up and the beveled side downward. Dip the clutch plates in clean transmission fluid. Install first a composition driven plate and a steel drive plate (Fig. 52). Install the remaining plates in this sequence. Refer to the Specification Section for the number of plates required. The last plate installed will be the rear pressure plate. Install the snap ring and make certain that it seats fully in the groove. When new composition clutch plates are used, soak the plates in automatic transmission fluid for 15 minutes before they are assembled.
5. With a feeler gauge, check the clearance between the snap ring and

the pressure plate (Fig. 55). Downward pressure on the plate should be maintained when making this check. Refer to the Specifications Section for the proper clearance.

6. If the clearance is not within specifications, selective snap rings are available in the following thicknesses: 0.056-0.060, 0.065-0.069, 0.074-0.078, 0.083-0.087 and 0.092-0.096 inch. Insert the correct size snap ring and recheck the clearance.

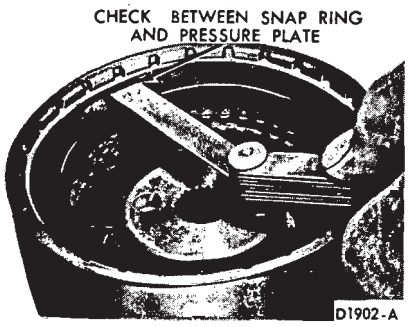


FIG. 55—Checking Forward Clutch Clearance

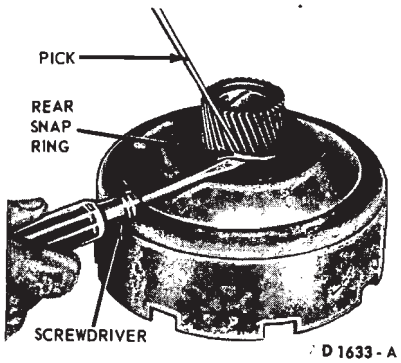


FIG. 56—Removing Sun Gear Snap Ring

INPUT SHELL AND SUN GEAR

Disassembly

1. Remove the external snap ring on from the sun gear as shown in Fig. 56.
2. Remove the thrust washer from the input shell and sun gear (Fig. 57).
3. Working from inside the input shell remove the sun gear. Remove the internal snap ring from the gear.

Assembly

1. Install the forward snap ring on the forward end (short end) of the sun gear (Fig. 57). Working from inside the input shell, slide the sun gear and snap ring into place making sure that the longer end is at the rear (Fig. 57).
2. Place the No. 6 thrust washer on the sun gear and install the rear snap ring.

OUTPUT SHAFT HUB AND RING GEAR

Disassembly

1. Remove the hub retaining snap ring (Fig. 58) from the ring gear.
2. Lift the hub from the ring gear.

Assembly

1. Position the hub in the ring gear.
2. Secure the hub with the retaining snap ring. Make certain that the snap ring is fully engaged with the groove.

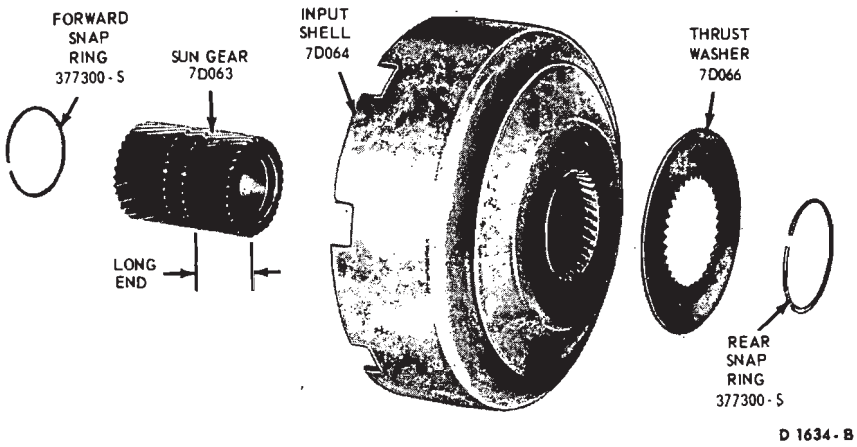


FIG. 57—Input Shell and Sun Gear Disassembled

ONE-WAY CLUTCH

Disassembly

1. Remove the snap ring and rear bushing from the rear of the low-reverse clutch hub (Fig. 59).
2. Remove the springs and rollers from the spring retainer and lift the spring retainer from the hub.
3. Remove the remaining bushing and snap ring from the hub.

Assembly

1. Install a snap ring in the forward snap ring groove of the low-reverse clutch hub.
2. Place the low-reverse clutch hub on the bench with the forward end down (Fig. 60).
3. Place the forward clutch bushing against the snap ring with the flat side up. Install the one-way clutch spring retainer on top of the bushing. Be sure to install the retainer in the hub so that the springs load the rollers in a counterclockwise direction when looking down at the unit (Fig. 60).
4. Install a spring and roller into each of the spring retainer compartments by slightly compressing each spring and positioning the roller between the spring and the spring retainer (Fig. 60).
5. Install the rear bushing on top of the retainer with the flat side down.
6. Install the remaining snap ring at the rear of the low-reverse clutch hub to secure the assembly.

SERVO

Disassembly

1. Apply air pressure to the port in the servo cover to remove the piston and rod.

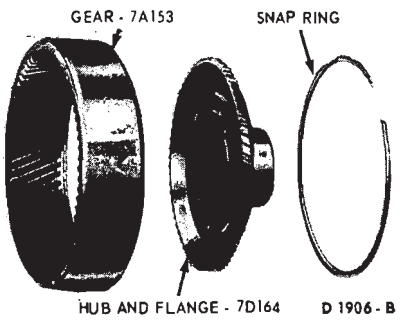


FIG. 58—Output Shaft Hub and Ring Gear

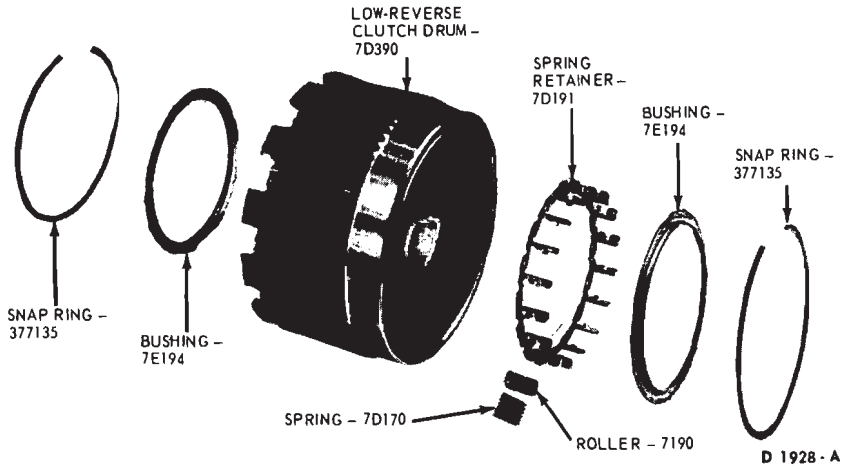


FIG. 59—One-Way Clutch Disassembled

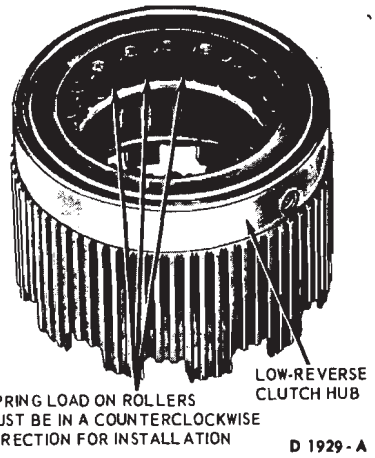


FIG. 60—Installing One-Way Clutch

2. Remove the seals from the piston.

On Lincoln Continental and Continental Mark III models, replace the complete piston and rod assembly if the piston or piston sealing lips are unserviceable or damaged.

3. Remove the seal from the cover.

Assembly

1. Dip the new seals in transmission fluid.
2. Install new seals on the cover and servo piston. Fig. 61 shows the correct servo piston and cover for the transmission.
3. Dip the piston in transmission fluid and install it in the cover.

LOW-REVERSE CLUTCH PISTON

Disassembly

1. Remove the inner and the outer seal from the reverse clutch piston.

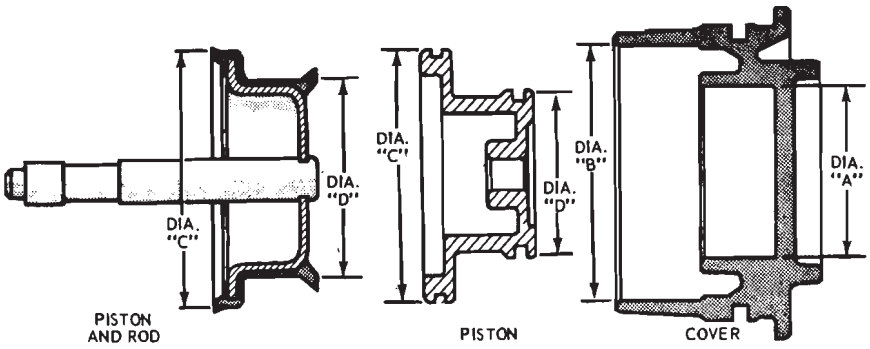
Assembly

1. Dip the two new seals in clean transmission fluid.
2. Install the seals on the piston.

OUTPUT SHAFT

Disassembly

1. Remove the governor attaching bolts and remove the governor.
2. Remove the snap ring that secures the governor distributor on the output shaft (Fig. 62) and slide it off the front of the shaft.
3. Remove the seal rings from the distributor.



Models	Diameter – Inches			
	A	B	C	D
PGA-A4, J4 PJA-A, B PJB-A,B,C,D,G,H PJC-E, F	2.075	2.980	2.971	2.066
PGB-F3, G3 PJB-F, J	2.342	3.025	3.016	2.333
PGB-AF2 PJC-A, B	2.477	NONE	3.492	2.468
PJD-B,C,E,F	2.075	2.980	3.013	2.108

D 2037-C

FIG. 61—Intermediate Servo Cover and Piston Dimensions

Assembly

1. Carefully install new seal rings on the distributor.
2. Working from the front end of the output shaft, slide the governor distributor into place on the shaft. Install the snap ring to secure it. Make sure that the snap ring is seated in the groove.
3. Position the governor on the distributor (Fig. 62) and secure them with the attaching screws.

ASSEMBLY OF TRANSMISSION

1. Place the transmission case in a holding fixture.
2. Position the low-reverse clutch piston so that check ball is in the 6 o' clock position (toward bottom of case) and tap the piston into place in the case with a clean rubber hammer.
3. Hold the one-way clutch inner race in position and install and torque the attaching bolts to specification.
4. Install a low-reverse clutch return spring in each pocket in the clutch piston. Press the springs firmly into the piston to prevent them from

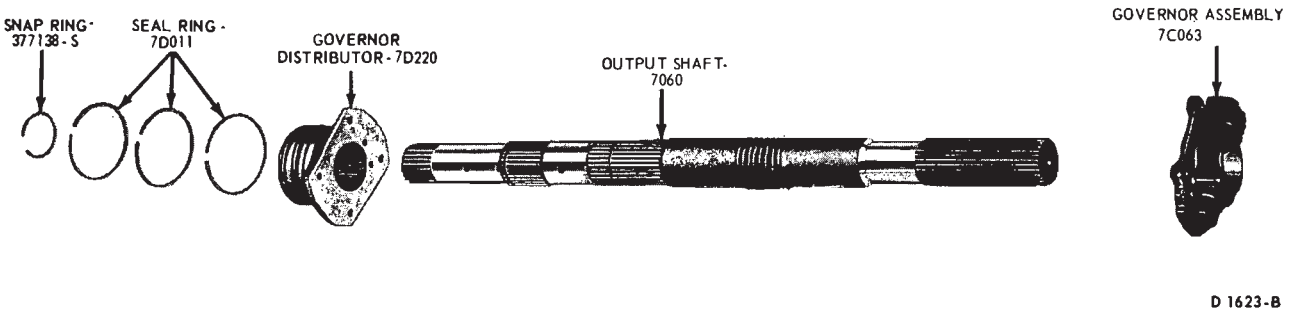


FIG. 62—Output Shaft Disassembled

falling out.

5. Position the spring retainer over the springs and position the retainer snap ring in place on the one-way clutch inner race.

6. Install the compressing tool shown in Fig. 29 and compress the springs just enough to install the low-reverse clutch piston retainer snap ring.

7. Install the snap ring, then remove the compressing tool.

8. Place the transmission case on the bench with the front end facing downward.

9. Position the parking gear thrust washer and the gear on the case (Fig. 33). **Do not restake the thrust washer.**

10. Position the oil distributor and tubes in place on the rear of the case. Install and torque the attaching bolts to specification.

11. Install the output shaft, and governor as an assembly.

12. Place a new gasket on the rear of the transmission case. Position the extension housing on the case and install the attaching bolts. Torque the attaching bolts to specification.

13. Place the case in the holding fixture.

14. Align the low-reverse clutch hub and one-way clutch with the inner race at the rear of the case. Rotate the low-reverse clutch hub clockwise while applying pressure to seat it on the inner race.

15. Install the low-reverse clutch plates, starting with a steel plate and following with friction and steel plates alternately. Retain them with vaseline. Refer to the Specifications Section for the number of plates required. If new composition plates are being used, soak them in clean transmission fluid for fifteen minutes before installation. Install the pressure plate and the snap ring. Test the operation of the low-reverse clutch by applying air pressure at the clutch pressure apply hole in the case.

16. Install the reverse planet ring gear thrust washer and the ring gear and hub assembly. Insert the snap ring in the groove in the output shaft.

17. Assemble the front and rear thrust washers onto the reverse planet assembly; retain with vasoline. Insert the assembly into the ring gear and install the snap ring.

18. Set the reverse-high clutch on the bench, with the front end facing down. Install the thrust washer on the rear end of the reverse-high clutch assembly. Retain the thrust washer with vaseline and insert the splined end of forward clutch into the open end of the reverse-high clutch so that the splines engage the direct clutch friction plates (Fig. 43).

19. Install the thrust washer and retain it with vaseline, on the front end of the forward planet ring gear and hub. Insert the ring gear into the forward clutch.

20. Install the thrust washer on the front end of the forward planet assembly. Retain the washer with vaseline and insert the assembly into the ring gear. Install the input shell and sun gear assembly.

21. Install the reverse-high clutch, forward clutch, forward planet assembly and drive input shell and sun gear as an assembly into the transmission case.

22. Insert the intermediate band into the case around the direct clutch cylinder. Install the struts and then tighten the band adjusting screw sufficiently to retain the band.

23. Place a selective thickness bronze thrust washer on the rear shoulder of the stator support and retain it with vaseline. If the end play was not within specification when checked prior to disassembly, replace the washer with one of proper thickness. Refer to Specifications Section for selective thrust washer thicknesses. Lay a new gasket on the rear mounting face of the pump and position on the case being careful not to damage the large seal on the O.D. of the pump housing. Install six of the seven mounting bolts and torque them to specification.

24. Adjust the intermediate band as detailed in Section 2 and install the input shaft with the long splined end inserted into the forward clutch assembly.

25. Install tool 4201-C at the seventh pump mounting bolt (Fig. 24) and check the transmission end play. Remove the tool.

26. Install the control valve in the case, making sure that the levers engage the valves properly. Install the primary throttle valve, rod, and the vacuum diaphragm in the case.

27. Install a new pan gasket and the pan.

28. Install the converter assembly.

29. Install the transmission in the vehicle.

5 SPECIFICATIONS

APPROXIMATE REFILL CAPACITIES

	U.S. Measure	Imperial Measure
Lincoln Continental	13 qt.	10-3/4 qt.
All Other Models	12-3/4 qt.	10-1/2 qt.

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CONVERTER IDENTIFICATION AND STALL SPEEDS

Converter Part Number	Nominal Size	Stall Ratio	Identification No. ①	Transmission Model	Engine CID	Stall Speed
C9AP-7902-D ②	12	2.14:1	59	PGA-A4, J4	390-2V	1600-1860
				PJA-A, B	429-2V	1760-1960
C9OP-7902-C ③	12	2.05:1	60	PGB-G3	390-2V	1660-1860
				PGA-Y1, AE1	390-4V ⑤	1760-1960
				PGB-F3	428-4V ④	1800-2020
				PJB-F	429-2V ⑤	1800-2020
				PJB-A,B,F,J PJC-E,F	429-4V ⑥	1880-2100
				PJD-E,F,C	460-4V	1940-2140
C9VP-7902-A ②	12	2.05:1	61	PJD-C,E,F	460-4V	1940-2140
C9OP-7902-D ③	12	2.05:1	63	PGB-AF2	428-4V, C.J.	1840-2060
				PJC-A,B	429-4V, C.J.	
C9SP-7902-A ③	12	2.05:1	62	PJB-C,D,G,H	429-4V	1860-2080

①Converter identification is stamped on the converter cover adjacent to the converter drive stud.
②For service replacement, use converter assembly C8OP-7902-A (No. 53)
③Improved performance
④ Police interceptor
⑤Police and fleet units

CD2154-A

CONTROL PRESSURE AT ZERO GOVERNOR RPM

Engine Speed			Idle			As Required		As Required		
Throttle			Closed			As Required		As Required		
Manifold Vacuum (Inches Hg)			Above 18 ①			10		Below 1.0		
Range			Control Pressure (psi)		TV Pressure (psi)	Control Pressure (psi)	TV Pressure (psi)	Control Pressure (psi)		TV Pressure (psi)
			P, N, D, 2, 1	R		D, 2, 1		D, 2, 1	R	
	Barometric Pressure in Inches HG	Nominal Altitude (Feet)								
psi @ Barometric Pressure ②	29.5	Sea Level	56–62	71–86	7–10	100–115	40–44	160–190	240–300	77–84
psi @ Barometric Pressure ③	28.5	1000	49–59	65–80	4–7	99–114	37–41	158–176	233–290	74–80
	27.5	2000	49–56	60–75	2–5	96–111	35–39	156–174	228–284	72–78
	26.5	3000	49–56	56–71	0–3	91–106	32–36	151–169	222–277	69–75
	25.5	4000	49–56	56–65	0	88–103	30–34	146–164	215–269	66–72
	24.5	5000	49–56	56–65	0	84–98	27–31	143–161	211–264	64–70
	23.5	6000	49–56	56–65	0	80–95	25–29	138–156	204–256	61–67

Manifold Vacuum	Barometric Pressure at 29.5 Inches ②		Barometric Pressure at 24.5 Inches ④	
	T.V.	Cont.	T.V.	Cont.
17	11–14	56–69	0–1	49–56
16	15–18	56–75	2–5	49–56
15	20–22	56–84	7–9	49–61
14	23–26	56–92	10–13	56–67
13	28–31	56–98	15–18	56–75
12	32–35	56–105	19–22	56–84
11	36–40	56–111	23–27	56–92

① It may not be possible to obtain 18 inches of engine vacuum at idle. For idle vacuums of less than 18 inches the following table provides idle speed pressure specifications in D range:

② These specifications (with altitude compensating diaphragm) apply at observed barometric pressure of 29.5 inches (nominal sea level)

③ Specifications for barometric pressures of less than 29.5 inches.

④ At barometric pressures between 29.5 inches and 24.5 inches idle, pressures should fall between the values shown.

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CHECKS AND ADJUSTMENTS

Operation	Specification	
Transmission End Play	0.008-0.044 (Selective Thrust Washers Available)	
Turbine and Stator End Play	New or rebuilt 0.021 max. Used 0.030 max. ①	
Intermediate Band Adjustment	Remove and discard lock nut. Adjust screw to 10 ft-lbs torque, then back off 1 turn, install new lock nut and tighten lock nut to specification.	
Forward Clutch Pressure Plate-to-Snap Ring Clearance	0.031-0.044	
Selective Snap Ring Thicknesses	0.056-0.060, 0.065-0.069, 0.074-0.078, 0.083-0.087, 0.092-0.096	
Reverse-High Clutch Pressure Plate-to-Snap Ring Clearance	Transmission Models	
	PGA, PJA	PGB-AF2, F3, G3, PJB, PJC-A, B, E, F, PJD
	0.022-0.036	0.027-0.043
Selective Snap Ring Thicknesses	0.065-0.069, 0.074-0.078, 0.083-0.087	

① To check end play, exert force on checking tool to compress turbine to cover thrust washer wear plate. Set indicator at zero.

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SELECTIVE THRUST WASHERS

Identification No.	Thrust Washer Thickness – Inch		Identification No.	Thrust Washer Thickness – Inch
1	0.056–0.058		4	0.103–0.105
2	0.073–0.075			
3	0.088–0.090		5	0.118–0.120

CD2157-A

Transmission Model	Steel Plates	Friction Plates	Transmission Model	Steel Plates	Friction Plates
Forward Clutch Plates – PGA, PJA	3	4	Low – Reverse Clutch Plates – PGA, PJA	4 (6) ①	4
PGB, PJB, PJC, PJD	4	5	PGB-F3, G3, AF2, PJB-F, PJC-A,B	6 (6) ①	6
Reverse – High Clutch Plates – PGA, PJA	3	3	PJB-A, B, C, D, G, PJC-E, F, PJD	5 (5) ①	5
PGB-F3, G3 PJB, PJD, PJC-E, F	4	4	① Use the quantities shown in parenthesis when a service replacement case is installed.		
PGB-AF-2 PJC-A, B	5	5			

CD2158-A

CONTROL VALVE SPRING IDENTIFICATION

Spring		Total Coils	Free Length (Inches)	Spring Dia. O.D. (Inches)	Wire Dia. (Inches)	Length at Lbs. Load		Spring Color Code
						Load	Length	
1-2 Shift Accumulator Valve	Model PHB-P, R, S	8.5	1.170	0.470	0.035	2.900	0.445	Yellow
	Model PHD, PHA	9	1.260	0.470	0.038	4.250	0.445	None
	Model PHB-E1, L1, V	8.5	0.92	0.470	0.035	1.900	0.445	None
1st-2nd Shift Control Valve		7	1.880	0.725	0.044	4.600	0.560	White
Throttle Press. Booster Valve:	Model PHB-A, PHD	15.5	1.980	0.470	0.047	6.650	0.890	Blue
	Model PHB-C,D,E,F,G,H	15.5	1.660	0.470	0.047	5.250	0.890	Green
2-1 Scheduling Valve:	Model PHB, PHA	11	0.880	0.265	0.026	2.400	0.415	Pink
	Model PHD	12	0.910	0.265	0.023	1.400	0.415	(2) Pink Stripes
Low Inhibitor Valve:	Model PHB, PHD, PHA	17	1.270	0.230	0.025	1.900	0.890	Yellow
Control Oil Press. Comp. Valve-Outer:	Model PHB-E1,L1,V,PHA	8	1.640	0.509 I.D.	0.038	3.200	0.500	White
	Model PHD	9	1.650	0.509 I.D.	0.035	2.400	0.500	Pink
	Model PHB-P,R,S	7	1.09	0.509 I.D.	0.034	1.520	0.500	Purple
Control Oil Press. Comp. Valve-Inner:	Model PHB-E1,L1,V,PHA	13.5	1.620	0.310 I.D.	0.023	1.100	0.460	Pink
	Model PHD	13.5	1.230	0.310 I.D.	0.030	2.000	0.460	Blue
	Model-PHB-P,R,S	10	1.00	0.390	0.034	2.720	0.520	None
Downshift Valve		13.5	1.107	0.250	0.023	1.400	0.640	None
Control Check Valve		12	0.480	0.214	0.014	0.100	0.280	None
3rd-2nd Downshift Control Valve		14.5	0.820	0.200	0.018	0.605	0.520	Purple
Transition Valve	Model PHA, PHD	8	1.600	0.470 I.D.	0.031	2.000	0.460	Lt. Blue
	Model PHB	7	1.320	0.470 I.D.	0.035	2.750	0.460	Orange
2nd-3rd Shift Valve – Inner		21	1.340	0.295	0.028	1.500	0.670	Green
2nd-3rd Shift Valve – Outer		4	1.008	0.692 I.D.	0.041	2.950	0.430	White
Low Servo Modulator Valve		29.5	1.800	0.235	0.028	2.975	1.050	None

CD2159-A

SHIFT SPEED ACTUAL MPH

FORD, MERCURY, METEOR WITH 390-2V AND 429-2V ENGINES

Throttle	Range	Shift	1	2	3	4	5	6	7
Closed	D	1-2	8-10	8-9	8-9	7-8	7-8	7-8	7-8
(Above	D	2-3	8-19	8-18	8-18	7-17	7-16	7-14	7-15
17"	D	3-1	8-10	8-9	8-9	7-8	7-8	7-8	7-8
Vacuum)	1	2-1	23-32	22-31	21-30	21-28	20-29	17-26	19-26
To Detent	D	1-2	30-44	28-43	27-41	27-39	25-38	25-36	24-35
(Torque	D	2-3	52-70	49-69	47-66	46-63	44-62	43-58	42-57
Demand)	D	3-2	26-40	23-39	24-37	22-35	22-35	20-33	21-32
Through	D	1-2	46-54	44-52	42-51	41-48	39-47	38-44	37-44
Detent	D	2-3	79-89	76-87	73-84	70-79	67-78	66-74	64-72
(W.O.T.)	D	3-2	73-82	70-81	67-78	65-73	61-72	60-68	57-67
	D	3-1 or 2-1	36-43	35-42	33-41	32-39	31-38	30-36	29-35

Axle Ratio	Tire Size	Use Column No.
2.75:1	H78 x 15, 8.55 x 15	1
	H70 x 15	
	F78 x 15, G78 x 15	2
	8.25 x 15	
	7.75 x 15	3
2.80:1	H78 x 15, 8.55 x 15	2
	H70 x 15, G78 x 15	
	8.25 x 15	
	7.78 x 15, 7.75 x 15	3

Axle Ratio	Tire Size	Use Column No.
3.00:1	H78 x 15, 8.55 x 15	3
	G78 x 15, 8.25 x 15	4
	F78 x 15, 7.75 x 15	5
3.25:1	G78 x 15, 8.25 x 15	6
	H78 x 15, 8.55 x 15	5
	H70 x 15	
	F78 x 15, 7.75 x 15	7

CD2160-A

FORD, MERCURY AND METEOR 390-2V, 429-2V-4V POLICE AND TAXI; MONTEGO 429-4V POLICE AND TAXI

Throttle	Range	Shift	1	2	3	4	5	6
Closed	D	1-2	8-9	8-10	8-9	7-9	7-8	6-8
(Above	D	2-3	8-21	8-21	8-19	7-19	7-18	6-18
17"	D	3-1	8-9	8-10	8-9	7-9	7-8	*6-8
Vacuum)	1	2-1	26-34	25-33	24-32	23-31	22-29	21-29
To Detent	D	1-2	37-50	35-49	34-47	33-45	31-43	30-42
(Torque	D	2-3	64-82	61-79	59-76	57-74	55-70	52-68
Demand)	D	3-2	29-42	28-41	27-40	26-38	25-36	24-35
Through	D	1-2	49-57	47-55	43-53	44-51	42-49	40-47
Detent	D	2-3	84-93	80-90	78-87	75-84	72-80	69-78
(W.O.T.)	D	3-2	74-83	71-81	70-78	66-75	64-72	61-69
	D	3-1 or 2-1	37-43	35-42	34-40	33-39	31-37	30-35

Axle Ratio	Tire Size	Use Column No.
2.80:1	H78 x 15, 8.55 x 15	1
	H70 x 15	
	8.25 x 15, G78 x 15	2
	7.75 x 15, F78 x 15	
3.00:1	H78 x 15, 8.55 x 15	3
	H70 x 15	
	8.25 x 15, G78 x 15	4
	7.75 x 15, F78 x 15	

Axle Ratio	Tire Size	Use Column No.
3.25:1	H78 x 15, 8.55 x 15	5
	H70 x 15	
	8.25 x 15, G78 x 15	6
	7.75 x 15, F78 x 15	

CD2161-A

FORD & MERCURY VEHICLES WITH 428-4V (POLICE INTERCEPTOR) ENGINE

Throttle	Range	Shift	1	2	3	4
Closed (Above 17" Vacuum)	D	1-2	8-9	8-9	8-10	7-9
	D	2-3	8-22	8-20	8-21	7-20
	D	3-1	8-9	8-9	8-10	7-9
	1	2-1	27-36	25-34	26-35	24-33
To Detent (Torque Demand)	D	1-2	38-53	36-50	37-51	34-48
	D	2-3	66-86	62-80	64-83	60-78
	D	3-2	33-45	31-42	29-43	27-41
Through Detent (W.O.T.)	D	1-2	51-59	48-56	49-58	46-54
	D	2-3	88-97	82-92	85-95	79-89
	D	3-2	75-88	70-82	76-85	70-80
	D	3-1 or 2-1	39-45	36-42	37-44	34-41

Axle Ratio	Tire Size	Use Column No.
2.80:1	8.55 x 15, H70 x 15	1
	H78 x 15	1
	8.25 x 15, G78 x 15	3
	7.75 x 15, F78 x 15	3
3.00:1	8.55 x 15, H70 x 15	2
	H78 x 15	2
	8.25 x 15, G78 x 15	4
	7.75 x 15, F78 x 15	4

CD2162-A

FAIRLANE, MONTEGO 429-4V C.J. AND MUSTANG, COUGAR 428-4V C.J. ENGINES

Throttle	Range	Shift	1	2	3	4	5	6
Closed (Above 17" Vacuum)	D	1-2	7-8	7-8	6-7	5-6	6-7	5-6
	D	2-3	7-21	7-20	6-18	5-16	6-16	5-15
	D	3-1	7-8	7-8	6-7	5-6	6-7	5-6
	1	2-1	26-36	25-35	22-31	19-27	20-27	18-25
To Detent (Torque Demand)	D	1-2	39-53	37-51	32-45	28-40	30-41	26-37
	D	2-3	66-85	63-83	54-73	48-64	51-66	44-60
	D	3-2	29-44	28-43	24-38	22-33	23-34	20-33
Through Detent (W.O.T.)	D	1-2	53-61	50-60	43-53	38-46	41-47	35-43
	D	2-3	90-100	85-100	70-86	66-77	70-78	60-70
	D	3-2	80-90	76-88	65-78	59-68	62-70	54-63
	D	3-1 or 2-1	40-48	38-46	33-41	29-36	31-37	27-33

Axle Ratio	Tire Size	Use Column No.
3.00:1	G78 x 14	1
	E78 x 14, E70 x 14	2
	7.35 x 14, F78 x 14	2
	7.75 x 14, F760 x 15	2
	F70 x 14	2
3.50:1	All	3

Axle Ratio	Tire Size	Use Column No.
3.91:1	E78 x 14, E70 x 14	4
	7.35 x 14, F78 x 14	4
	7.75 x 14, F60 x 15	4
	F70 x 14	4
	G78 x 14	5
4.30:1	All	6

CD2163-A

FORD, MERCURY AND METEOR 429-4V

Throttle	Range	Shift	1	2	3	4
Closed	D	1-2	8-10	8-10	7-9	7-8
(Above	D	2-3	8-18	8-18	7-17	7-16
17"	D	3-1	8-10	8-10	7-9	7-8
Vacuum)	1	2-1	23-32	21-31	20-29	19-27
To Detent	D	1-2	35-48	32-47	30-43	28-40
(Torque	D	2-3	60-74	56-72	51-66	49-61
Demand)	D	3-2	26-40	24-37	23-34	21-33
Through	D	1-2	48-55	44-54	42-49	39-46
Detent	D	2-3	82-90	75-89	70-82	67-75
(W.O.T.)	D	3-2	73-82	67-80	64-73	59-67
	D	3-1 or 2-1	36-43	33-42	31-39	29-36

Axle Ratio	Tire Size	Use Column No.
2.75:1	8.55 x 15, H70 x 15	1
	H78 x 15	1
	7.75 x 15, 8.25 x 15	2
	G78 x 15, F78 x 15	2
3.00:1	8.55 x 15, H70 x 15	2
	H78 x 15	2
	7.75 x 15, 8.25 x 15	3
	G78 x 15, F78 x 15	3

Axle Ratio	Tire Size	Use Column No.
3.25:1	8.55 x 15, H70 x 15	3
	H78 x 15	3
	8.25 x 15, G78 x 15	4
	F78 x 15, 7.75 x 15	4

CD2164-A

FAIRLANE, MONTEGO 429-4V ENGINES

Throttle	Range	Shift	1	2	3	4	5	6
Closed	D	1-2	7-8	7-9	6-8	6-7	5-7	5-6
(Above	D	2-3	7-16	7-16	6-15	6-14	5-13	5-11
17"	D	3-1	7-8	7-9	6-8	6-7	5-7	5-6
Vacuum)	1	2-1	20-28	19-27	18-26	17-24	15-22	14-20
To Detent	D	1-2	30-43	29-41	27-39	25-37	23-33	20-30
(Torque	D	2-3	52-66	50-64	46-61	44-56	39-51	35-46
Demand)	D	3-2	23-35	22-34	20-33	19-30	17-27	15-25
Through	D	1-2	42-50	40-47	38-49	35-42	31-38	28-34
Detent	D	2-3	71-80	68-78	63-78	59-69	53-63	48-56
(W.O.T.)	D	3-2	63-73	61-70	56-67	53-62	47-57	43-51
	D	3-1 or 2-1	31-38	30-37	29-36	26-33	23-30	21-27

Axle Ratio	Tire Size	Use Column No.
3.00:1	F70 x 14, G78 x 14	1
	7.35 x 14, E78 x 14	2
	E70 x 14, F60 x 15	2
	7.75 x 14, F70 x 14	2
3.25:1	All	3

Axle Ratio	Tire Size	Use Column No.
3.50:1	All	4
3.91:1	All	5
4.30:1	All	6

CD2165-A

THUNDERBIRD WITH 429-4V ENGINES

Throttle	Range	Shift	1	2	3	4
Closed	D	1-2	8-9	7-8	8-9	7-8
(Above	D	2-3	8-18	7-16	8-17	7-15
17"	D	3-1	8-9	7-8	8-9	7-8
Vacuum)	1	2-1	19-29	17-25	19-29	16-24
To Detent	D	1-2	34-47	29-40	33-45	28-39
(Torque	D	2-3	60-73	51-63	57-70	49-61
Demand)	D	3-2	26-39	22-33	25-37	21-32
Through	D	1-2	47-54	41-47	45-52	39-45
Detent	D	2-3	80-90	70-77	77-86	67-75
(W.O.T.)	D	3-2	72-80	62-69	69-78	60-67
	D	3-1 or 2-1	35-40	30-36	34-41	30-35

Axle Ratio	Tire Size	Use Column No.
2.80:1	8.55 x 15, H78 x 15	1
	2.15 x 15	3
3.25:1	8.55 x 15, H78 x 15	2
	2.15 x 15	4

CD2166-A

THUNDERBIRD, LINCOLN CONTINENTAL AND CONTINENTAL MARK III WITH 460-4V ENGINE

Throttle	Range	Shift	1	2	3	4
Closed	D	1-2	8-10	7-8	7-8	7-10
(Above	D	2-3	8-22	7-18	7-19	7-21
17"	D	3-1	8-10	7-8	7-8	8-10
Vacuum)	1	2-1	20-30	17-25	18-26	20-28
To Detent	D	1-2	25-42	24-34	25-35	27-39
(Torque	D	2-3	56-76	48-62	50-65	55-71
Demand)	D	3-2	26-42	22-34	23-35	25-39
Through	D	1-2	41-50	35-41	37-43	40-47
Detent	D	2-3	78-92	68-76	70-88	77-86
(W.O.T.)	D	3-2	68-81	59-66	61-69	67-76
	D	3-1 or 2-1	25-34	22-28	22-29	25-32

Vehicle	Axle Ratio	Tire Size	Use Column No.
Lincoln Continental	2.80:1	9.15 x 15	1
	3.00:1	9.15 x 15	4
Continental Mark III	2.80:1	9.15 x 15, 2.25R x 15	1
	3.25:1	9.15 x 15	4
		2.25R x 15	2
Thunderbird	2.80:1	H78 x 15, 8.55 x 15	1
		2.15R x 15	1
	3.25:1	H78 x 15, 8.55 x 15	3
		2.15R x 15	2

CD2167-A

TORQUE LIMITS

Item	Ft-Lbs	Item	Ft-Lbs
Converter to Flywheel	20-30	Pressure Gauge Tap	9-15
Front Pump to Trans. Case	12-20	Band Adj. Screw Locknut to Case	35-45
Overrunning Clutch Race to Case	18-25	Cooler Tube Connector Lock	25-35
Oil Pan to Case	12-16	Converter Drain Plug	14-28
Stator Support to Pump	12-16	Manual Valve Inner Lever to Shaft	30-40
Converter Cover to Converter Hsg.	12-16	Downshift Lever to Shaft	12-16
Guide Plate to Case	12-16	Filler Tube to Engine	20-25
Intermediate Servo Cover to Case	10-14	Transmission to Engine	40-50
Diaphragm Assy. to Case	15-23	Steering Col. Lock Rod Adj. Nut	10-20
Distributor Sleeve to Case	12-16	Neutral Start Swtich Actuator Lever Bolt	6-10
Extension Assy. to Trans. Case	25-30		

Item	In-Lbs	Item	In-Lbs
End Plates to Body	20-30	Neutral Switch-to Column	20
Inner Downshift Lever Stop	20-30	Control Assy. to Case	90-125
Reinforcement Plate to Body	20-30	Gov. Body to Collector Body	80-120
Screen and Lower to Upper Valve Body	50-60	Oil Tube Connector	80-145
Neutral Switch to Case	55-75		

CD2168-A

SPECIAL TOOLS

Ford Tool No.	Former No.	Description	Ford Tool No.	Former No.	Description
TOOL-1175-AB	1175-AB	Grease Seal Remover (Head Only)	T64P-7A128-A		Manual Valve Detent Spring
T50T-100-A and TOOL-1175-AB	1175-AE	Seal Remover	T61L-7657-B	7657-B	Transmission Extension Housing Oil Seal Replacer
T59L-100-B and T58L-101-A		Slide Hammer and Puller	T57P-7697-A		Transmission Extension Housing Bushing Remover
TOOL-4201-C	4201-C	Differential Backlash and Runout Gauge, with Universal Bracket, Dial indicator and Bracket	T57P-7697-B		Transmission Extension Housing Bushing Replacer
			T59P-77067		Dial Indicator Support Fixture
TOOL-7000-DD	7000-DD	Air Nozzle Rubber Tip Assembly	TOOL-77288	77288	Control Shaft Seal Replacer
T64L-6001-A		Transmission Holding Fixture	T59P-77370-B	7345	Front Band Torque Wrench
T69P-7D044-A		Automatic Transmission Bushing Kit Remover and Replacer	T65L-77515-A		Rear Clutch Spring Compressor
			T63L-77837-A	77837-A	Front Pump Seal Replacer

CD2169-A